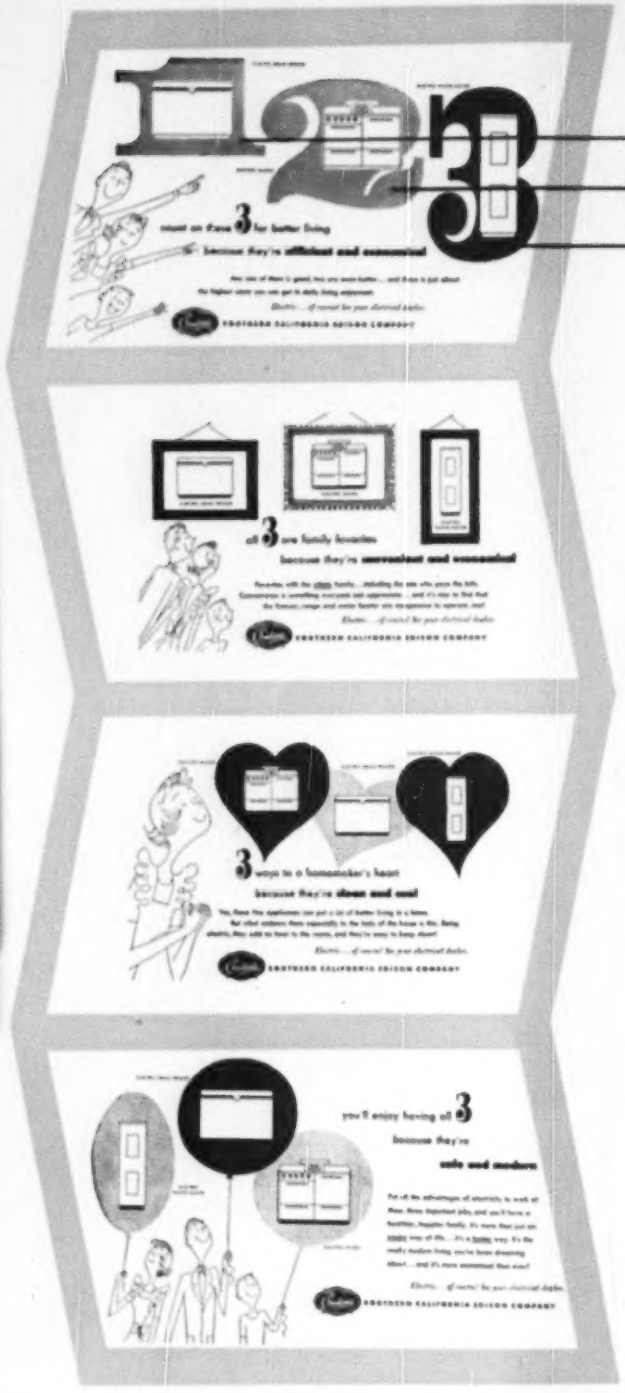
ELECTRICAL WEST

September 1950
25 Cents

Annual Lighting Issue

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED REGION OF THE U. S.



You can take the numbers 1, 2 and 3 and put them together in six different combinations. That's simple arithmetic. But when you put three electrical appliances into a series of advertisements, you find you can aim it at *seven* different groups of customers—the seventh, of course, being those who have none of the three!

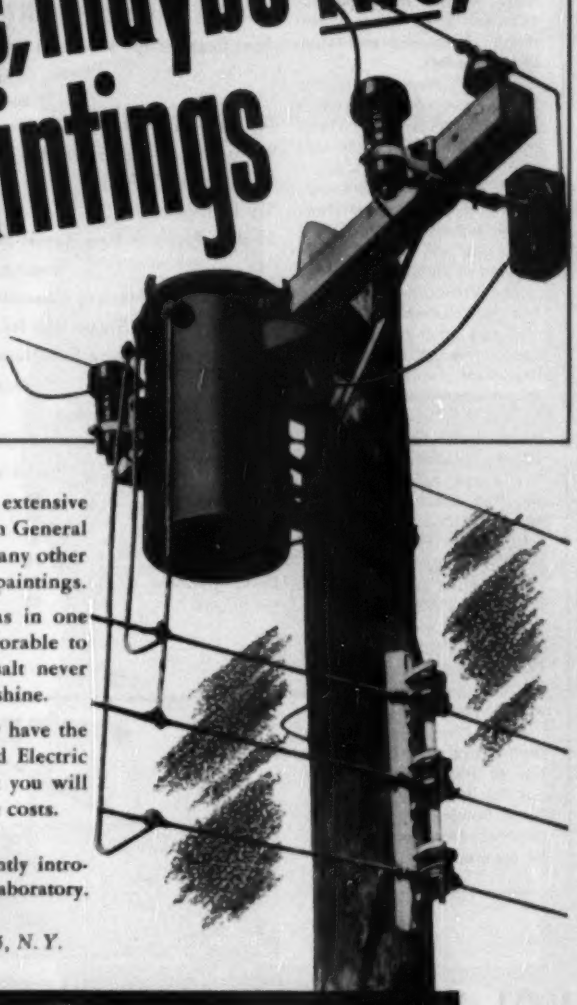
That's what we've done in these Edison Company newspaper advertisements. They're aimed at those who have none, any one or any two of the featured appliances: electric ranges, electric water heaters and electric home freezers. It works out to a nice wide variety of prospects for appliance sales. Particularly when each advertisement points out that the way to reach the highest score in living enjoyment is to "see your electrical dealer!"

Edison

SOUTHERN CALIFORNIA EDISON COMPANY

SPIRAKORE® TRANSFORMERS

Save one, maybe two, repaintings



San Diego Gas and Electric has been running extensive tests on paint finishes. The Melaglyp* paint on General Electric transformers, they say, is superior to any other paint tested. It will save one, maybe two, repaintings.

This is testimony from a company that has in one location almost every condition that is unfavorable to paint: Salt spray. Dry spells during which salt never washes off. Heavy dew. Intense California sunshine.

Your own G-E Spirakore Transformers now have the same Melaglyp paint that San Diego Gas and Electric has found so superior. We are confident that you will find that this paint is cutting your maintenance costs.

*A melamine-modified-Glyptal® paint just recently introduced as a result of work by the G-E Pittsfield laboratory.

Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

GENERAL ELECTRIC

402-99

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

SEPTEMBER 1950

SPOKESMAN FOR MOST HIGHLY ELECTRIFIED REGION OF THE U. S.
The all-industry magazine of progress, established 1887, and incorporating the "Electrical Journal," "Journal of Electricity, Power and Gas" and "Journal of Electricity." Contents copyright, Sixty-third year of publication

ELECTRICAL WEST

James H. McGraw (1860-1948), Founder
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W. A. Cyr, Associate Editor — Walter C. Heston, Engineering Editor
Peggy Boyer, Assistant Editor — E. A. Belsari, Publishing Counselor
John W. Otterson, Manager — John Cootz, Typography

NEXT MONTH

For our October annual industrial issue we are planning a census taking of heavy Western industry to see how it would measure up to all-out mobilization. Likewise the power supply picture for the West will be reviewed, accompanied by short statements from representative utility leaders.

We will have one of the best pieces we have seen on Western industrial expension—the problems and the outlook for Western industry—in an article by AldenRoach, president of Columbia Steel. Steel expansion during the past year will be separately treated in picture-story form.

The West now has a wire mill for aluminum transmission and other conductor. A descriptive article will give important facts about the Alcoa wire mill at Vancouver.

Two significant developments in the field of copper will be covered. Kennecott has a new refinery, making its Utah operations fully integrated. Anaconda is going into a new type of "glory hole" mining. Progress and status of the chemical industry in the West is another subject that will be covered. "Tailored Electric Heat" will be an article discussing an interesting industrial heating application.

Industrial heating data sheets and reports on a series of meetings will round out the issue. The Northwest Public Power Association and two inspectors' meetings will be covered.

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Cover photo: New slimline tunnel lighting in San Francisco. See story on page 66.

ADVERTISING REPRESENTATIVES
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Cleveland (5) — Frank J. Seller, 1510 Hanna Bldg.
Los Angeles (17) — W. D. Lanier, 1111 Wilshire Blvd., MA. 6-4323
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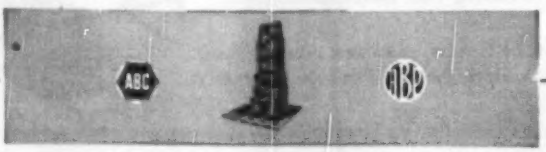
San Francisco (4) — Tom Cormody, 68 Post St., DO. 2-4600



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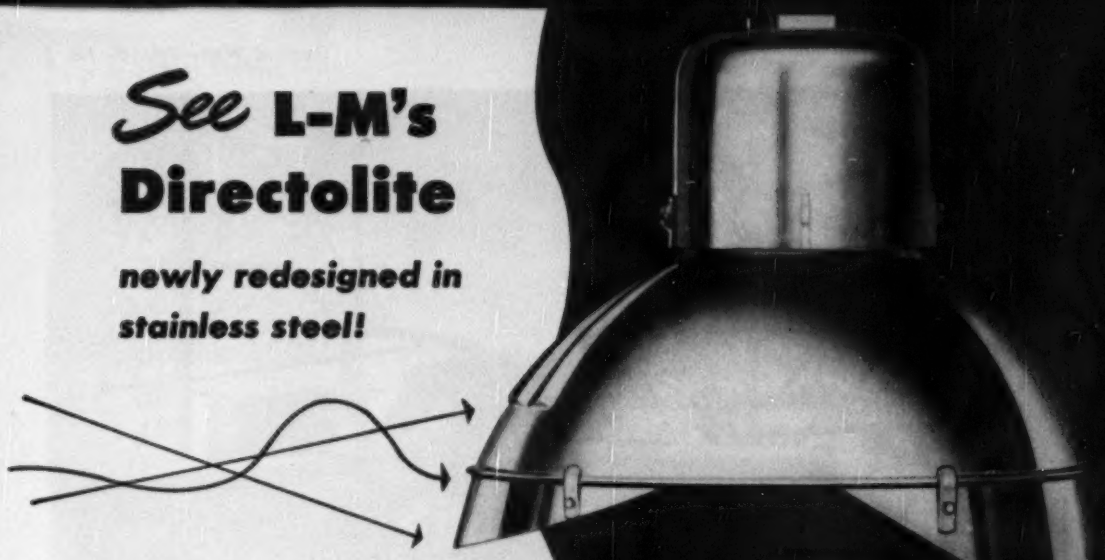
VOL. 105 NO. 3

See L-M's Directolite

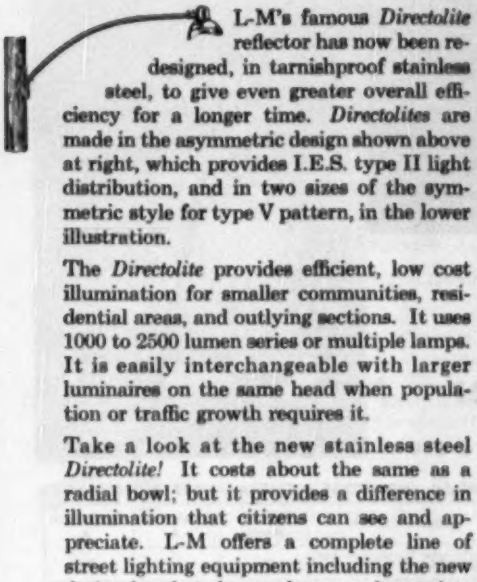
newly redesigned in stainless steel!



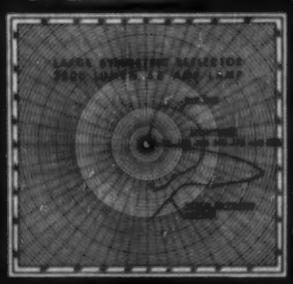
L-M's famous *Directolite* reflector has now been redesigned, in tarnishproof stainless steel, to give even greater overall efficiency for a longer time. *Directolites* are made in the asymmetric design shown above at right, which provides I.E.S. type II light distribution, and in two sizes of the symmetric style for type V pattern, in the lower illustration.

The *Directolite* provides efficient, low cost illumination for smaller communities, residential areas, and outlying sections. It uses 1000 to 2500 lumen series or multiple lamps. It is easily interchangeable with larger luminaires on the same head when population or traffic growth requires it.

Take a look at the new stainless steel *Directolite!* It costs about the same as a radial bowl; but it provides a difference in illumination that citizens can see and appreciate. L-M offers a complete line of street lighting equipment including the new design bracket shown above; and complete street lighting engineering service.



Candlepower distribution curves of the asymmetric type Directolite, which provides lateral control to give I.E.S. type II distribution.



Candlepower distribution curve in vertical plane, I. E. S. type V, symmetric type Directolite.

Get this Bulletin

For more information ask your utility company or the L-M Field Engineer about L-M Directolites and a copy of this bulletin; or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LM-7679

LINE MATERIAL Street Lighting

Complete Coordinated Equipment for

Service Restored

faster than ever after ice storm . . .

Ice storms are a utility's nightmare. Recently, the Missouri Public Service Corporation had a beauty on its hands. Driven by high velocity winds, heavy sleet lashed trees and roads, coated them with 6 to 8 inches of ice, pulled down hundreds of miles of line in the 17-county service area.

Thanks to *instant communication* made possible by General Electric 2-way radio in line trucks and supervisors' cars, service was restored at least 3 to 4 days earlier than would have been possible without the use of radio, according to officials at company headquarters in Warrensburg.

Utilities in every state use G-E 2-way radio to coordinate planned interruptions, to save manhours, truck hours, time on outages. Let our engineers study your communication problem, too—there's no obligation. Write: *General Electric Company, Section 7 93, Electronics Park, Syracuse, New York.*

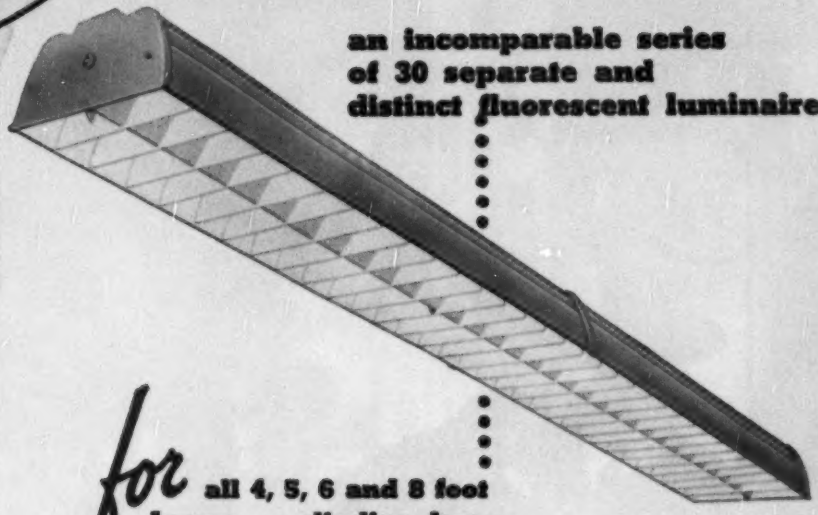
YOU BE THE JUDGE—CHECK THESE ADVANTAGES

Equipment Features	General Electric	Manufacturer A	Manufacturer B
Triple-Tuned Transformers (high selectivity with fewer tubes)	Yes	No	No
At Least 2 Watts Peak Audio Output	Yes	No	No
Instantaneous Modulation Limiting	Yes	Yes	No
Number of Tubes	18	26	22
Cost per Set of Tubes	$24.50	$50.16	$31.79
Spurious Radiation at any Frequency	65 db	60 db in the band only	60 db
Cable Junction Box	Not Required	Required	Not Required
Key Lock for Protection of Every Unit	Yes	Optional at Extra Cost	Not Available
Microphone Quick Release Plug	Yes	Not Available	Not Available
30 kc & 40 kc Receiver Selectivity	Yes	No	No
Two-Unit Design for Maximum Mounting Flexibility	Yes	No	No

You can put your confidence in—

GENERAL ELECTRIC

NEW CURTIS CORONET



an incomparable series of 30 separate and distinct fluorescent luminaires.

for **all 4, 5, 6 and 8 foot lamps . . . slimline, low-brightness or starter type.**

The new Curtis Coronet Series is designed to provide unexcelled general illumination for all commercial interiors. Eye-comfort, traditional in Curtis lighting units is even more characteristic of this skillfully engineered line. Yes, now Curtis offers not only Quality . . . *but "Quality with Features".*

Shielded 40° crosswise with either 40° or 25° lengthwise shielding . . . *offering the optimum in eye-comfort.*

Alzak Aluminum or Baked White "Fluracite" steel reflectors . . . *highest lighting efficiency.*

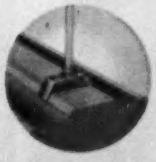
Newly designed "Tong Hangers" speed and simplify installation . . . *Lower installation cost.*

Fingertip control louver catches permit relamping 32 feet of lamps from one ladder position . . . *lower maintenance cost.*

Bears Electrical Testing Laboratories and Fleur-O-Lier labels . . . *guaranteed performance.*

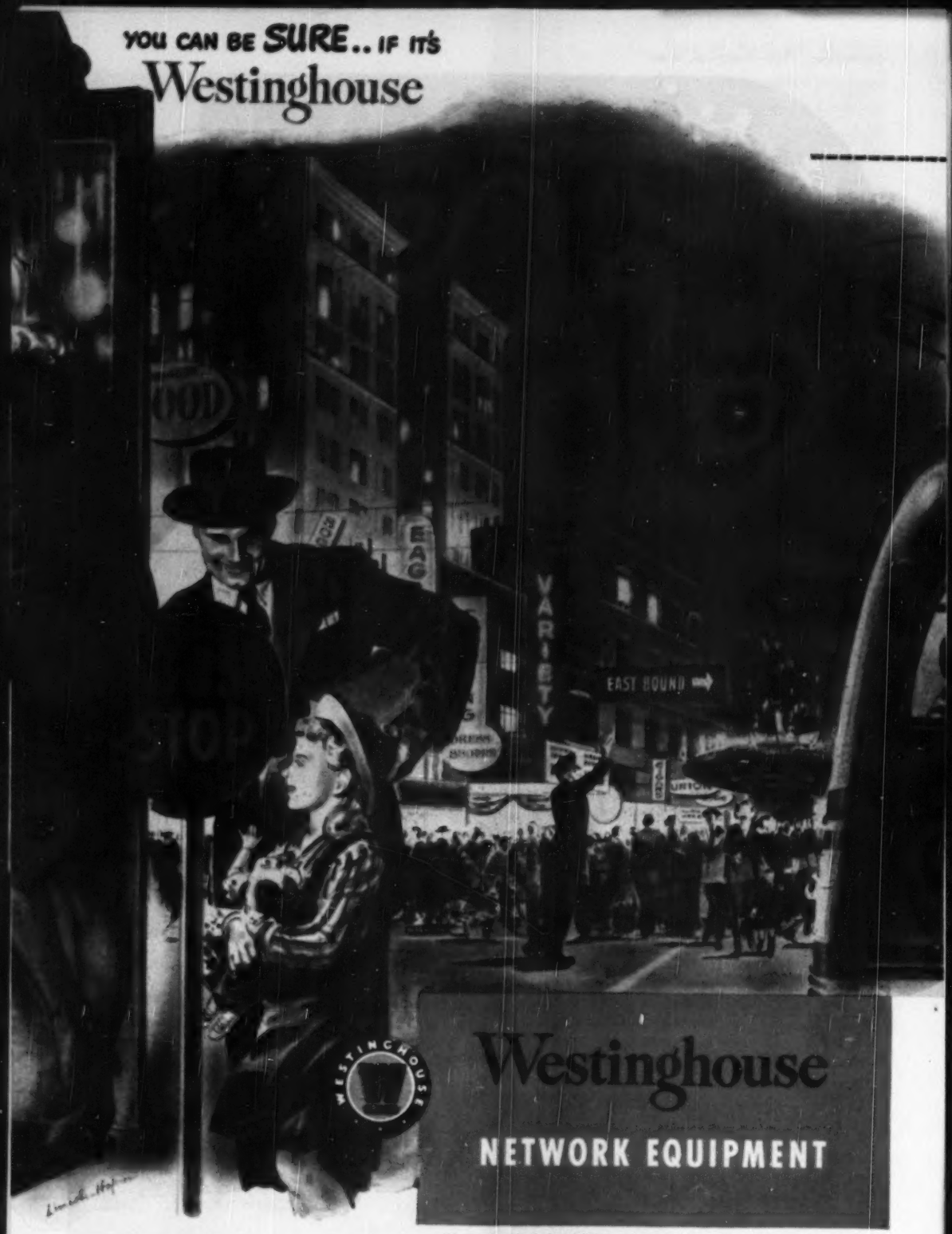
Curtis Tong Hanger already mounted, ready to receive wedge-top of luminaire wireway.

Tongs expand when luminaire is pushed upward in one simple motion. Edges of tongs catch under continuous ridge. Luminaire is released, weight pulls tongs together and assures a strong grip.



Simple lock nut above tong hanger is tightened and mounting is complete in a fraction of the time required by conventional methods.

Full technical specifications on coronet series and descriptive A.-I. Write for copy. Address


YOU CAN BE SURE.. IF IT'S
Westinghouse
VARIETY
EAST BOUND
WESTINGHOUSE
Westinghouse
NETWORK EQUIPMENT
Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver.

NOW is the time...

SECONDARY NETWORKS PAY!

Sixty-four per cent of the cities in the 100,000 to 250,000 population range enjoy the dependability and flexibility of secondary network systems! In larger cities the figure is 95 per cent! This is overwhelming proof of acceptance... and it is evidence of widespread action on this basic premise:

Growing loads can be handled most economically by switching to a secondary network system now!

Yes, the sooner you make the switch, the better, for never again will you have an opportunity to make the changeover as cheaply as you can *today!* You'll have less investment in stopgap equipment... a less expensive revamping job...a head start in secondary network savings.

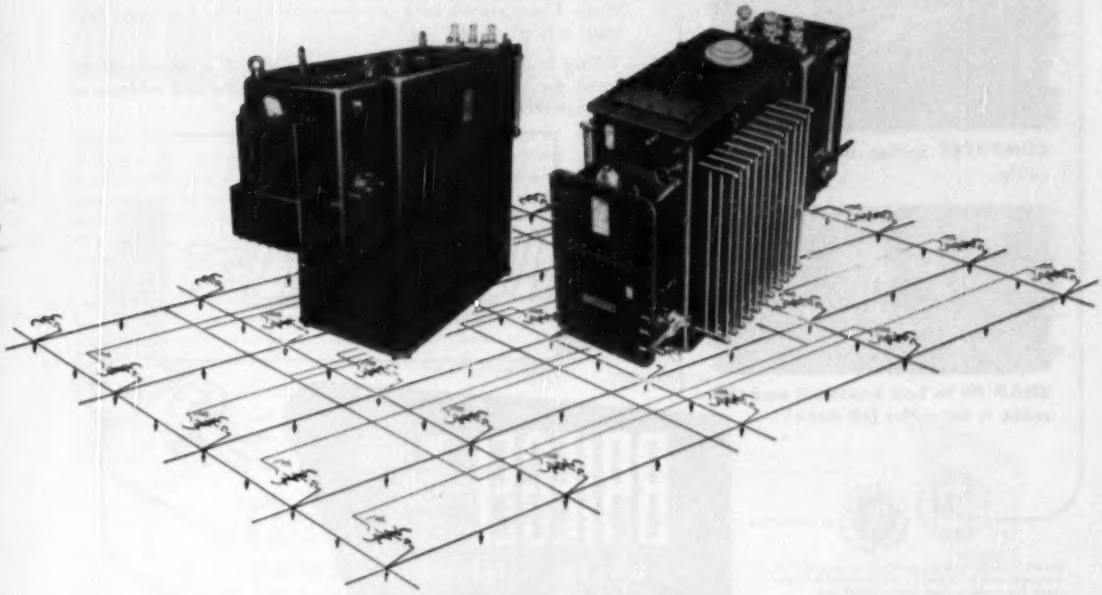
For medium-sized cities, secondary networks provide so high a degree of flexibility that load forecasting is no longer a major concern. Extensions, load shifts and load growth can be accommodated economically... layouts simplified... less and better co-ordinated equipment used. Operating costs go down... revenues and profits up!

As you plan your secondary network, look to Westinghouse for the equipment you'll need. Our complete, correlated line of network equipment includes the right transformers and protectors for all types of load areas.

Booklet B-4002, "A-C Secondary Network Systems", contains complete information. And remember... our complete facilities, engineers and calculating boards are available to help you with your network planning. Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

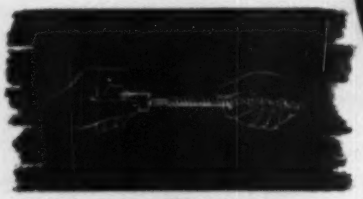
J-97144

Westinghouse Standardized Network Transformers... from liquid-filled units to submersible dry-type units ...match any degree of underground or overhead service.



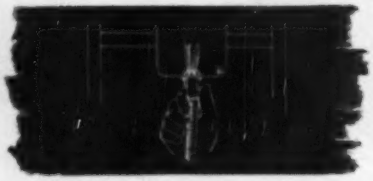
SnapX

It's New!
It's Different!
It's Easier to use!



INSERT cable in SNAPX connector.

COMPRESS spring clip that holds cable.

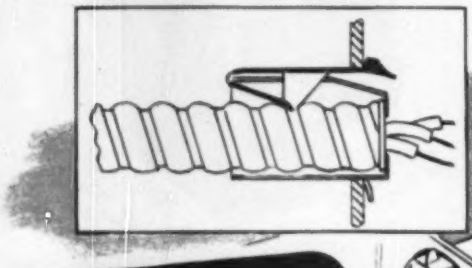


SNAP IN to box knockout and the cable is set — the job done!

The Entirely New Connectors For Armored and Non-Metallic Cable That You Just Snap Into Place!

SNAPX is the new cable connector that is installed without tools. There are no nuts or screws to tighten. Just compress, snap it in place and it's set.

To try it is to buy it. See how easy SNAPX is to use! Write today for your free sample, giving the name and address of your electrical wholesaler.



BM UL

SnapX Fittings for 2-12 and 3-12, 2-14 and 3-14 armored, and 3-12 and 3-14 non-metallic cable carry the underwriters seal of approval.

BRIEGEL METHOD TOOL CO.
GALVA • ILLINOIS

A DIFFICULT ELECTRICAL DISTRIBUTION PROBLEM

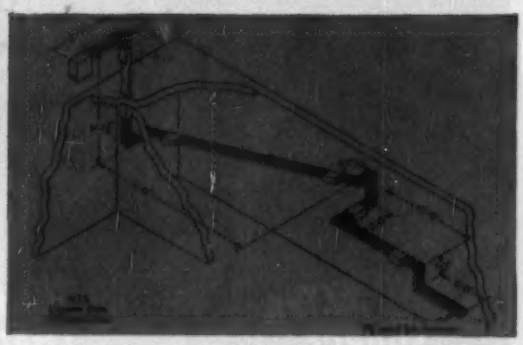
SOLVED

with

NATIONAL ELECTRIC "LO-LOSS" BUSWAY

National Electric "Lo-Loss" Busway answered the need for a new electric feeder capable of carrying 2000 Amperes in The Enquirer Building in Cincinnati. The feeder required for the new service had to travel a circuitous route between existing electrical conduits, busways, steam lines, air-conditioning ducts and building beams. Busway was by far the simplest and easiest way to take care of the job.

National Electric "Lo-Loss" Feeder Bus with insulated copper bars mounted on close centers was found to be ideally suited for the application. Its low reactance, high efficiency and factory-fabricated sections met the job requirement of an easily installed, flexible system that would provide the additional capacity.



"Lo-Loss" Feeder Bus is specifically designed for transmission of electrical current up to 4000 Amperes at 600 volts or less. It's compact in design—easily installed. It's the most economical . . . efficient way to carry electric power (less than 2.2 volts drop per 100 ft.).

Approved by
Underwriters' Laboratories, Inc.
for horizontal or vertical mounting.

EVERYTHING IN WIRING POINTS TO

National Electric
PRODUCTS CORPORATION

1308 CHAMBER OF COMMERCE BUILDING, PITTSBURGH 19, PA.

NO EXTRA CHARGE
FOR 14 TO 20 GAUGE STEEL PARTS

No Extra Charge

Wakefield®

NO EXTRA CHARGE
FOR FULLY COMPENSATED BALLASTS

NO EXTRA CHARGE
FOR CHEMICALLY PLATED UNDERCOAT TO INHIBIT RUST

NO EXTRA CHARGE
FOR TIME SAVING MAINTENANCE FEATURES

NO EXTRA CHARGE
FOR FAVORABLE BRIGHTNESS RATIOS

NO EXTRA CHARGE
FOR ONE-MAN HANGING EASE

FOR ELECTRICAL & GENERAL PURPOSE JOBS

● Security Tape will never let you down. Its adhesive compound is not just sticky, but strong and rubbery. To handle tougher jobs, the fabric is unusually high in tensile strength. Security has no pinholes to cause leaks. Straight-tearing, non-ravelling.

ASK YOUR WHOLESALER FOR SECURITY

A QUALITY PRODUCT OF U.S. RUBBER SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

ONE SOURCE: VICTOR

For distribution insulators and line hardware

YES, you can rely on VICTOR *alone* for *all* your distribution insulator and line hardware requirements . . . from pintype, spool, guy strain and dead-ending insulators, to strain and angle clamps of the highest quality. And, when you standardize on VICTOR, you—

CUT DISTRIBUTION COSTS 2 WAYS

1. *Less maintenance*—because these distribution insulators are ruggedly designed and made of the best "high voltage" porcelain to give you continuous, *trouble-free* performance under *all* kinds of operating conditions.

2. *Fewer replacements*—because each distribution insulator is thoroughly inspected and rigidly tested at *every* point of manufacture. This *guarantees* you top performance on-the-job.

So, on your next distribution job, standardize on VICTOR.

Now Available—

VICTOR'S ALL-NEW CONDENSED CATALOG

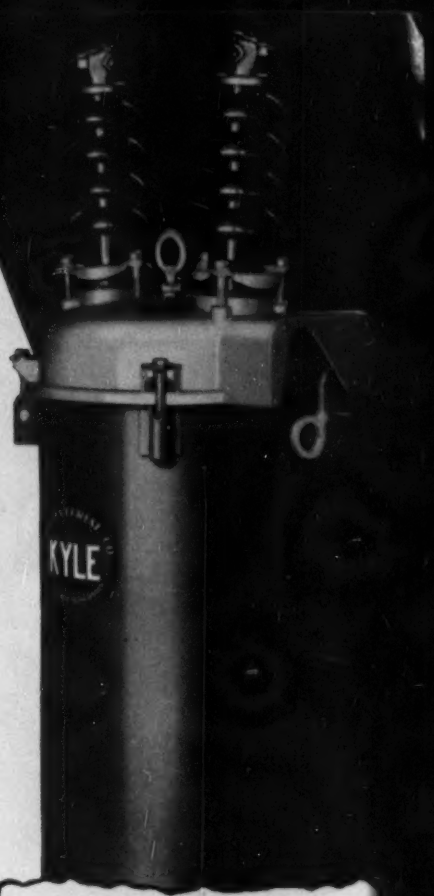
Write for your copy today!

VICTOR INSULATORS Inc.
VICTOR, NEW YORK

Look for this trade mark of enduring service

V

KYLE



TYPE "L" OIL CIRCUIT RECLOSER NOW GIVES YOU UP TO

6000 amps interrupting capacity

IN NEW 140-AMP RATING

First recloser actually engineered for heavy-duty service ... full power-class design ... 110 kv insulation impulse level ... ratings up to 140 amps ... only real heavy-duty recloser in its class

Kyle type "L" reclosers cost a little more than lighter-duty reclosers, but they're worth the difference in service, performance, convenience, and freedom from maintenance. Even if you don't need the extra interrupting capacity now, you will need it to take care of future loads; and in the meantime you enjoy all the benefits of type "L" performance and economy.

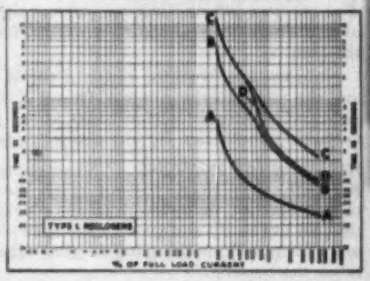
It's the Kyle oil cross-blast method of arc extinguishing, plus heavy-duty design, that makes it possible for the "L" to handle heavy fault currents up to 6000 amps.

The type "L" is the only recloser with so wide a choice of operating sequences. Four standard curves permit any sequence of operation to meet your coordination problems.

Sequence and coil changes are made right in the field—in a few minutes. To change to a coil of different rating, you just remove two screws. To change operating sequence, simply rotate a disc or change one small part. It's quick—and easy! Saves shop trips!

Extremely accurate; virtually no effect from ambient temperature changes. Positive fast operation; positive toggle closing—doesn't depend on gravity. Many safety features: cover and tank electrically dead—bushing tops only live parts; trip-free operating handle. Large sleet hood protects counter and operating handle; may be rotated in 90° steps. Rugged; shock-proof; trouble-free.

ONLY RECLOSER WITH 4 OPERATING CURVES



RATINGS

Coil Rating Amperes	Min. Trip Current Amperes	Maximum Interrupting Capacity Amperes At Maximum Phase-to-Phase Nominal Voltage of		
		4.8 kv	7.2 kv	14.4 kv
25	50	1500	1500	1500
35	70	2100	2100	2100
50	100	3000	3000	3000
70	140	4200	4000	3000
100	200	5000	4000	3000
140	280	6000	4000	3000

Read all about it!

Ask the L-M Field Engineer for a copy of Bulletin CR1A—on the type "L"; or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

18

LM

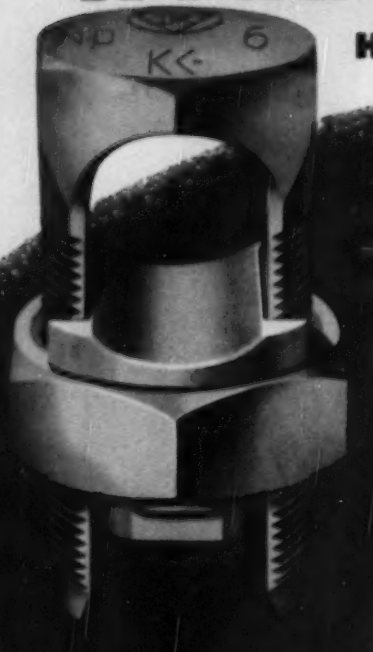
LINE MATERIAL... Kyle Reclosers

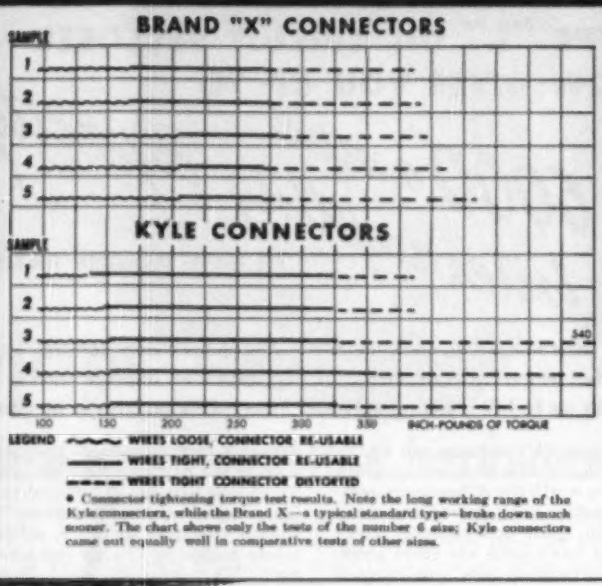
Complete Coordinated Equipment for Distribution Today

TORQUE TESTS SHOW

KYLE Split-Bolt Connectors

HAVE A LONGER WORKING RANGE





• Connector tightening torque test results. Note the long working range of the Kyle connectors, while the Brand X—a typical standard type—broke down much sooner. The chart shows only the tests of the number 6 size; Kyle connectors came out equally well in comparative tests of other sizes.

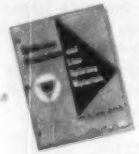
For our own information, we put the squeeze on a bunch of connectors—with a torque wrench. The test chart shows the results.

Note the *long* working range of the KYLE connectors, and the much *shorter* range of Brand X—a typical, standard-quality connector that looks about like ours. That's valuable information for *any* connector purchaser.

HERE'S WHAT HAPPENS . . . *Some* connectors—but not KYLES—have rough threads. That means extra torque to turn the nut, extra strain on the connector body. Often the pad fits badly and goes a little skew-gee, requiring still more torque. Something has to give—the connector body takes the beating.

But heavy-bodied KYLE connectors have clean, accurately machined threads, smoothly rounded edges, a close-fitting pad. The nut tightens easily, the pad slides up smoothly, the force is on the wire—and the connector comes up without damage while still holding the wire much tighter.

COSTS LESS TO USE . . . A connector that can be used only once is an expensive connector. A connector that can be re-used is more economical. KYLE connectors work better, last longer, and, as the chart above shows, they'll stand lots more torque and still come up ready for re-use. That makes it obvious that you get better connections, and lower costs, when you get KYLES, the long-range, long-life connectors.



• If you want to save money with quality connectors, ask the L-M Field Engineer for samples and a copy of Bulletin SC1 which gives details. Or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

TIGHTENING TORQUES FOR SPLIT-BOLT CONNECTORS RECOMMENDED FOR BEST RESULTS

Connector size	Inch-pounds
8	75
6	225
4	275
2	350
2 stranded	400
1/0	500
2/0	600
4/0	750

2-R

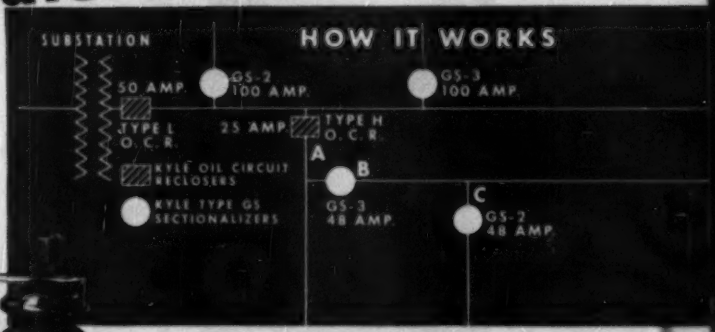
LM

LINE MATERIAL Kyle Connectors

How to make rural line protection fully automatic...

KYLE

type GS automatic oil sectionalizers



Completely automatic from substation to branch

Sectionalizers coordinate with reclosers to isolate branch lines on permanent faults. They are not current-interrupting devices. They open only while the recloser contacts are open. They are pre-set to lock out after the first, second, or third operation of the recloser.

In the diagram, A is the recloser. B is a Kyle sectionalizer set to open during the *third* operation of the recloser (indicated by GS-3). C is set to open after the *second* operation of the recloser. If a fault occurs beyond C, recloser A operates. If the fault doesn't clear on the first operation, the recloser opens again, and Sectionalizer C opens, isolating the tap. Then the recloser re-energizes the rest of the branch.

If a fault occurs *between* B and C, Sectionalizer C does not operate. But if the fault has not cleared by the third operation of the recloser, Sectionalizer B opens, isolating that branch. The recloser then re-energizes the rest of the line.

Other branches are also protected by Kyle sectionalizers which are opened by the 50-amp type L recloser at the substation.

ALL THE KYLE SAFETY FEATURES

Tank, cover, and operating handle electrically dead. Tank may be grounded. Mechanism cooled, and insulated from tank, by transformer oil. Trip-free operating handle—cannot impart a blow to operator.

RATINGS

Seven sizes, with minimum tripping currents 8 to 100 amps to coordinate with reclosers rated from 3 to 100 amps. Maximum operating currents 150 to 2000 amps, 2.4 to 15 kv. Weight with oil about 25 pounds. Crossarm or direct pole mounting.

ISOLATES permanent faults on branch lines...

COORDINATES with any make or type of recloser...

COSTS LESS to operate than fuses...

The Kyle type GS sectionalizer opens only on permanent faults that the recloser cannot clear; it provides completely automatic protection and positive coordination by eliminating the human element in installing the correct fuse; and while the GS costs more than a single-shot cutout, it saves far more than the difference, in time and service calls.

Because sectionalizers do not interrupt current, there is no arc to wear contacts or cause oil contamination. Sectionalizers cannot be used independently, but only with reclosers—of *any* make or type.

Ratings are changed in the field by replacing the trip coil. Lockouts are pre-set by changing the lockout adjustment pin—a matter of a few minutes. After a permanent fault has been corrected, the sectionalizer is manually reset with the operating handle.

Get the Whole Story

Ask the L-M Field Engineer to explain complete, automatic protection, and to give you a copy of Sectionalizer Bulletin CR3. Or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LINE MATERIAL...Kyle Sectionalizers

LINE MATERIAL Kyle Connectors

FOR DEPENDABLE MANUAL OR REMOTE CONTROL OF

capacitors . . .
street lighting . . .
airport lighting . . .
flood and other outdoor lighting . . .
sectionalizing . . .

L-M KYLE OIL SWITCHES

KYLE Type GR Motor-driven Remote-Control Oil Switch
100 amperes, 15,000 volts

The manually operated type G looks the same except for the separately housed motor-control mechanism on the left side. Total height including bushings, 18½"; tank, 7¼" diameter. Hangers for direct pole or crossarm mounting.

● L-M's KYLE oil switches are available in manual control type G, in electric remote control type GR, and in the new three-pole manually operated type 3G shown at right.

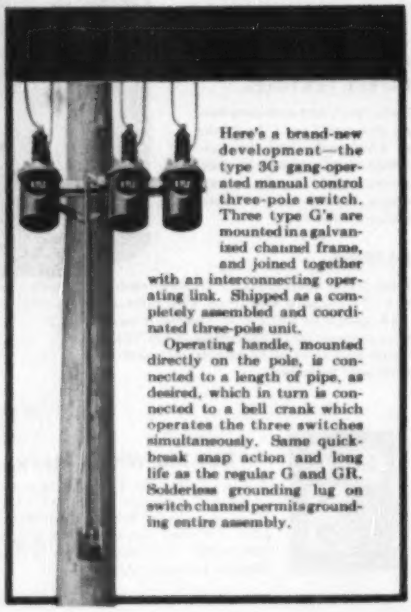
They are sturdy, dependable, economical; they provide many features that make them most desirable for a variety of light-duty load-break operations within their 15 kv 100 ampere rating.

KYLE switches provide fast operation. Contacts are fully open in less than a cycle. Double copper-tungsten contact tips minimize burning and pitting, assuring long life. The switches are light in weight, easy to install. Cost is moderate (type G costs only $33!); and they give long, dependable service. They are safe to use. The mechanism is insulated from the tank; head and operating handle are electrically dead. The only live parts are the top bushing terminals.

Type GR with Electric Control—The remote-control type GR has a shaded-pole 115-volt 60-cycle AC motor with control and selector switch to open or close the switch. It may also be operated manually if desired. There are no magnets requiring continuous current—the switch uses power only during actual opening and closing. Three single-phase type GR switches may be connected for simultaneous remote switching of three-phase circuits.

There's nothing to stop you from getting full information . . .

Ask the L-M Field Engineer for details and a copy of this inclusive Bulletin CR2 on oil switches; or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).



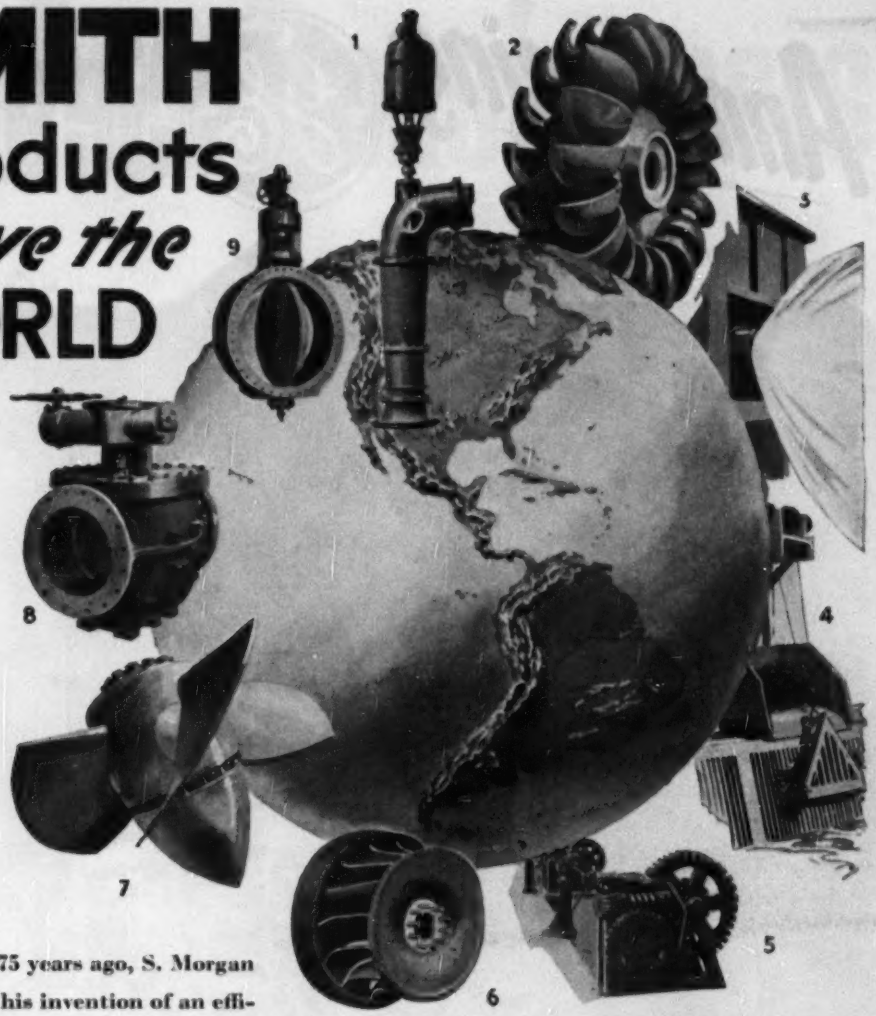
Here's a brand-new development—the type 3G gang-operated manual control three-pole switch. Three type G's are mounted in a galvanized channel frame, and joined together with an interconnecting operating link. Shipped as a completely assembled and coordinated three-pole unit.

Operating handle, mounted directly on the pole, is connected to a length of pipe, as desired, which in turn is connected to a bell crank which operates the three switches simultaneously. Same quick-break snap action and long life as the regular G and GR. Solderless grounding lug on switch channel permits grounding entire assembly.

LINE MATERIAL Kyle Oil Switches

LINE MATERIAL. . . Kyle Sectionalizers

SMITH Products *Serve the* WORLD



NEARLY 75 years ago, S. Morgan Smith by his invention of an efficient water turbine helped to usher in an amazing Chapter in Human Progress. And those who followed have kept faith, as their engineering skill, research, financial stability, and manufacturing facilities conclusively prove!

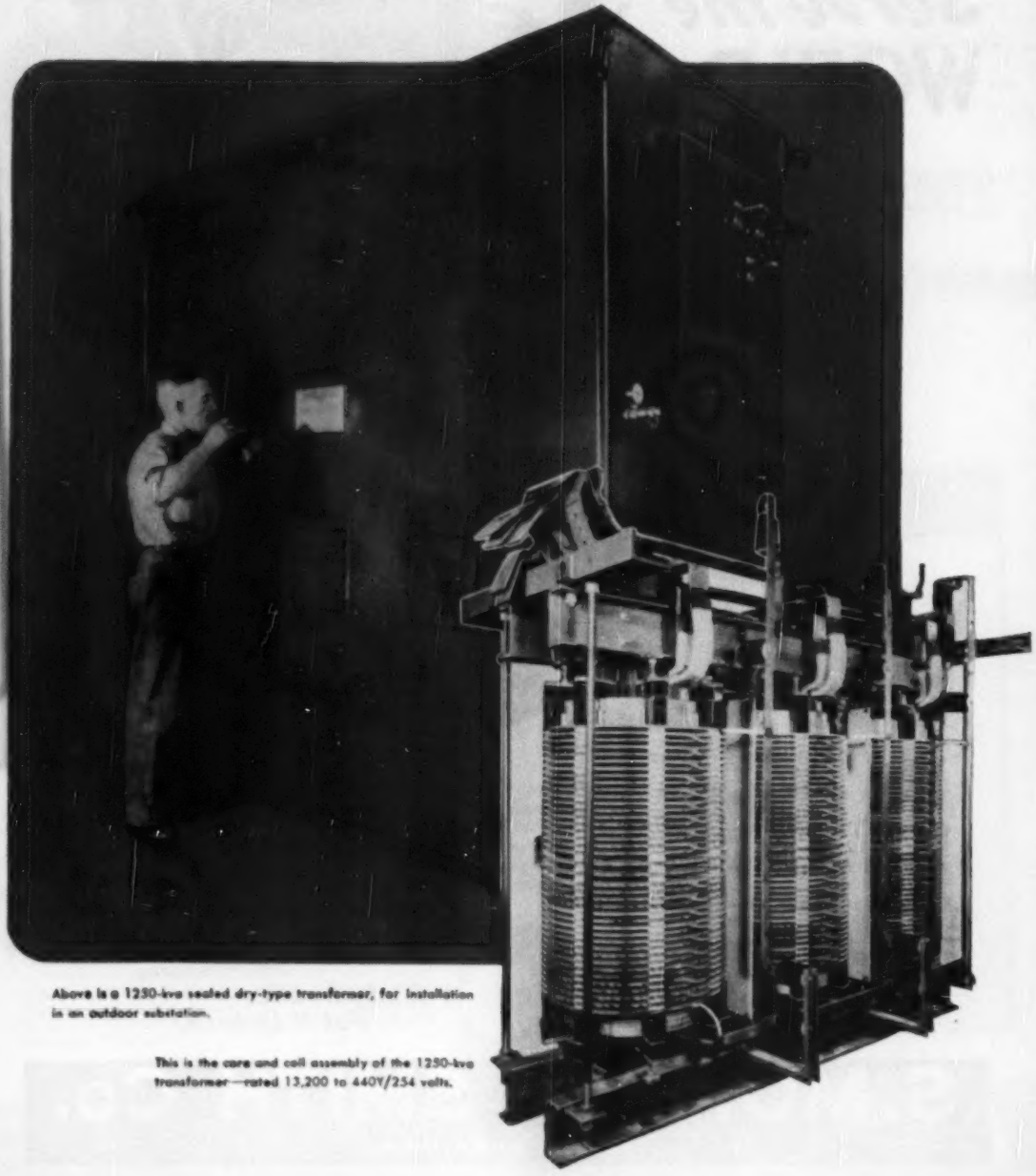
Look at the array of products: 1-Axial Flow Pumps; 2-Impulse Turbines; 3-Howell-Bunger Valves; 4-Leonard Trash Rack Rakes; 5-Hoists; 6-Francis Turbines; 7-Smith-Kaplan Turbines; 8-Rotovalves; 9-Butterfly Valves. Write for data!

If It's Hydraulics— Put It Up to Us!

S. MORGAN SMITH Co.

YORK PENNA. U.S.A.

Announcing GE Sealed



Above is a 1250-kva sealed dry-type transformer, for installation in an outdoor substation.

This is the core and coil assembly of the 1250-kva transformer—rated 13,200 to 440Y/254 volts.

Dry-Type Transformers

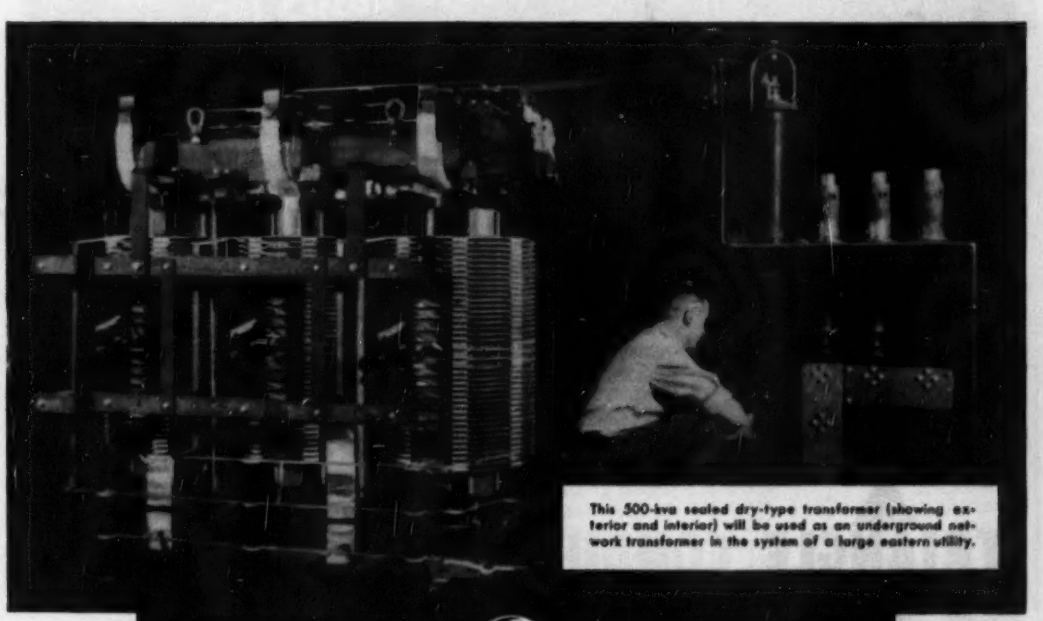
with Class H Inorganic Insulation

for INDOOR, OUTDOOR or UNDERGROUND service

- Nitrogen-filled tanks—no oil to maintain
- No tubes or radiators—installation and maintenance simplified
- Hermetically sealed—coils need no cleaning or drying
  —welded tank and metal-to-glass sealed bushings

Hermetically sealed dry-type transformers are now available in ratings up through 1500 kva and 15,000 volts. A product of General Electric research, these units can be supplied with G-E metal-clad switchgear for load center installations, or with network protector and high-voltage switch as a completely equipped network unit.

For further details refer to the nearest G-E Apparatus Sales Office or write *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*



This 500-kva sealed dry-type transformer (showing exterior and interior) will be used as an underground network transformer in the system of a large eastern utility.

GENERAL ELECTRIC

402-79

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

An Announcement of Importance to The Electrical Industry

UNDERWRITERS' APPROVE

TRIANGLE

"DUAL-RATED" WIRE

for

RH OR RW

APPLICATIONS

IT'S "DUAL-RATED" One wire — two purposes
Reduce inventory headaches —
specify "Dual-Rated" wire.

In a move of prime importance to the electrical industry, Underwriters' Laboratories, Inc., has issued an approval for Triangle's "Dual-Rated" Wire as Type RH or Type RW. This means that "Dual-Rated" wire is suitable for use as Type RH at 75°C. in dry locations or Type RW at 60°C. in wet locations.

"Dual-Rated", available in sizes #14 to 1,000,000 CM, is a superior quality general purpose wire, having the following outstanding properties: extreme moisture resistance, excellent heat resistance, exceptionally long life. In sizes #14 through #6, "Dual-Rated" incorporates Triangle's famous Glazon cover. When buying wire for hot or moist locations, reduce your inventory headaches — specify Triangle's "Dual-Rated" wire.

In the long run—you'll save —and get it faster—from a Triangle Distributor.

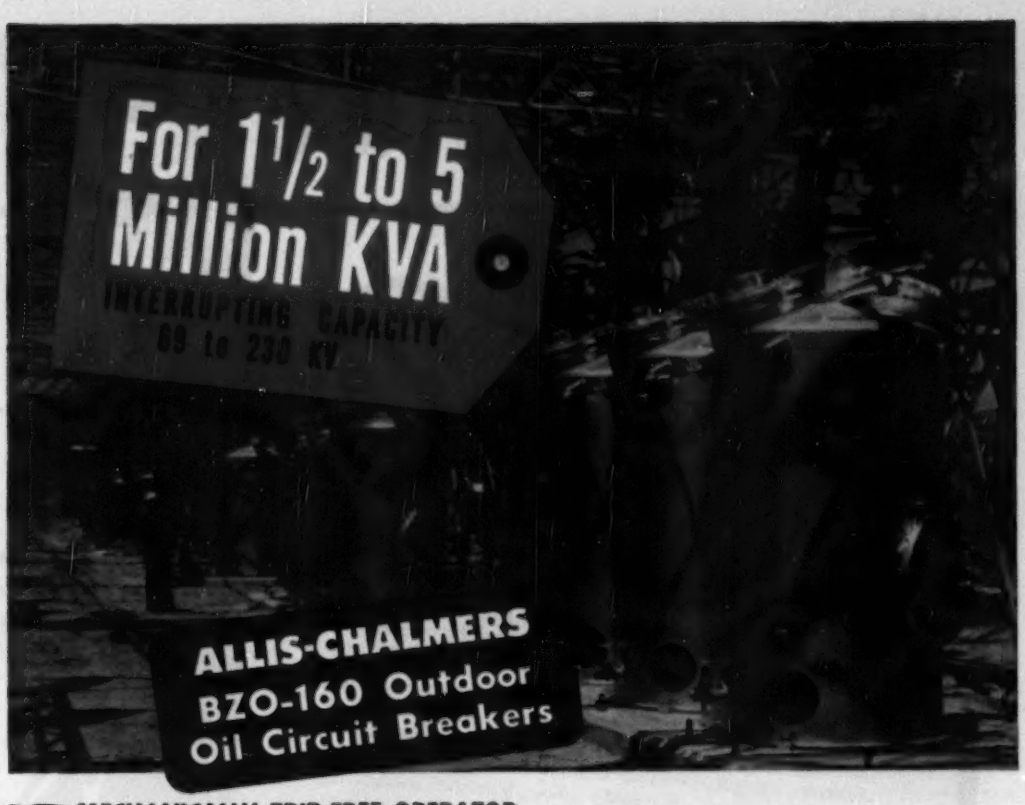
IT MUST BE RIGHT!

TRIANGLE CONDUIT & CABLE CO., INC.

1904 JERSEY AVENUE • NEW BRUNSWICK, NEW JERSEY

PLANTS: NEW BRUNSWICK, N. J., MOUNDSVILLE, WEST VA.

GLAZON BUILDING WIRE • BARE WIRE • ARMORED CABLE • GLAZON NON-METALLIC SHEATHED CABLE • SERVICE ENTRANCE, SERVICE DROP, VARNISHED CAMBRIC BRAIDED OR LEADED, TRIOPRENE TRENCH, POWER AND PARKWAY CABLES • RIGID CONDUIT HOT-DIPPED GALVANIZED • ELECTRIC METALLIC THIN WALL CONDUIT • FLEXIBLE STEEL CONDUIT



MECHANICALLY TRIP-FREE OPERATOR *affords high-speed opening*

RELIABLE HIGH SPEED FAULT CLEARING AND FAST RECLOSING *for system needs*

EVERY BREAKER COMPLETELY FACTORY ASSEMBLED AND TESTED *before shipping*

MAINTAIN continuity of power service despite transient line faults. The BZO-160 oil circuit breaker clears system faults in 3 to 5 cycles and recloses within 20 cycles to give you protection in ratings 69 kv and higher. Get long-life performance and reliable protection with these BZO-160 features:

1) Mechanically trip-free design gives high-speed contact opening under all operating conditions. Pneumatic operator is uncoupled from the contact mechanism through a positive mechanical linkage. This means that contacts open independent of closing piston position.

2) *Raptor* interrupter gives split-second arc extinction . . . interrupts load and fault currents with low arc energy release. Reduces oil and contact deterioration to a minimum. Arc resistant alloy contact tips give long contact life with little maintenance.

The BZO-160 performance is based upon more than 50 years of circuit breaker design and manufacturing experience, exacting laboratory and field tests, and years of power service. Simple breaker construction, free of complicated mechanisms, makes inspection easy.

For more information on dependable BZO-160 performance call your A-C sales office or write for new bulletin 71B6022C. A-3074

ALLIS-CHALMERS, 939A SO. 70 ST. MILWAUKEE, WIS.

STANDARD RATINGS

Rated KV	Rated Amp. 60 cycle	KVA Interrupting Capacity*
69	1200	2,500,000
69	2000	3,500,000
115	800	1,500,000
115	1200	3,500,000
138	800	1,500,000
138	1200	3,500,000
138	1200	5,000,000
161	800	3,500,000
161	800	5,000,000
230/196	800	3,500,000
230/196	800	5,000,000
230	800	3,500,000
230	800	5,000,000

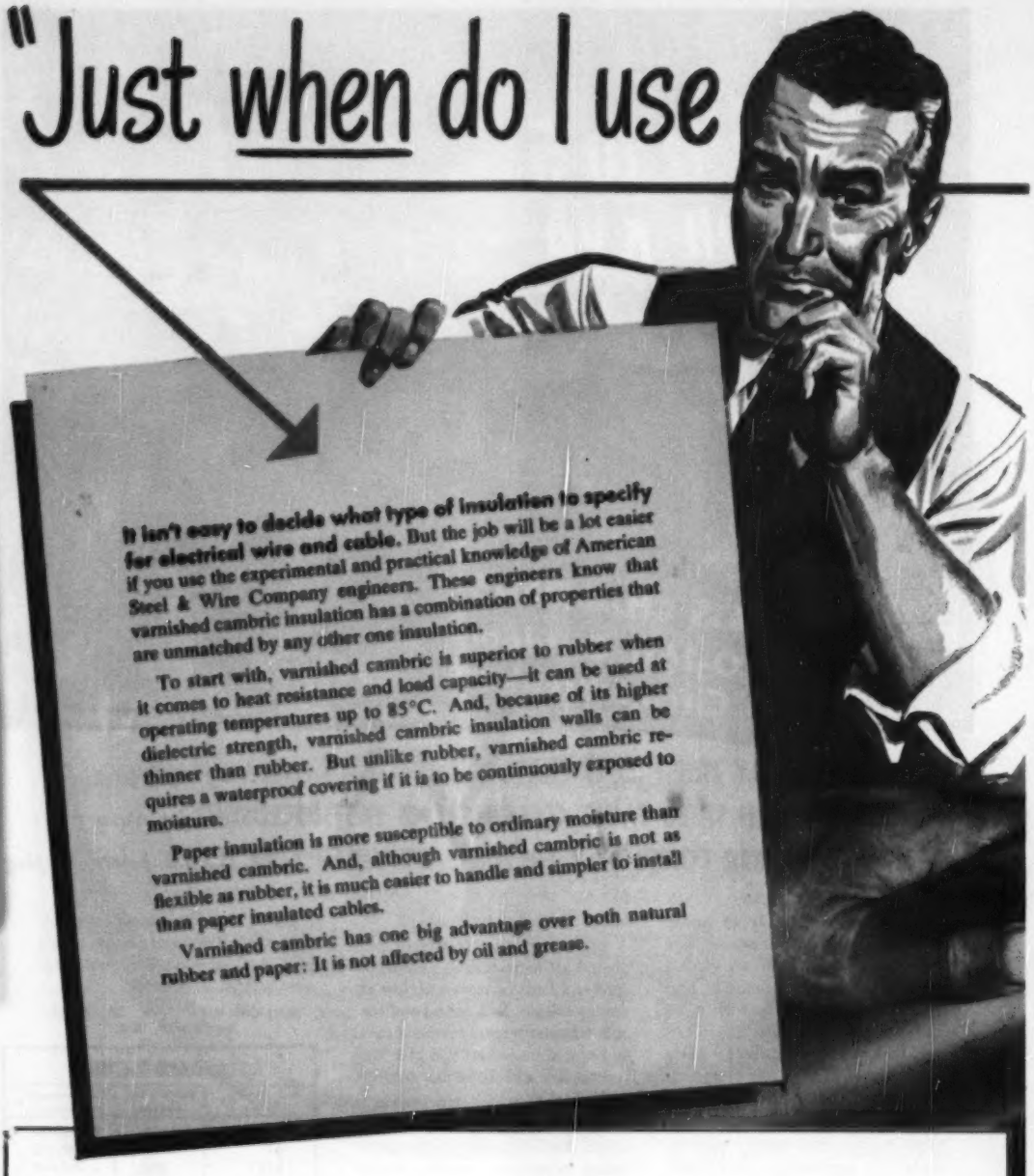
*For information on higher interrupting ratings, get in touch with your A-C sales office.

Raptor is an Allis-Chalmers trademark.

A-C

ALLIS-CHALMERS

"Just when do I use



It isn't easy to decide what type of insulation to specify for electrical wire and cable. But the job will be a lot easier if you use the experimental and practical knowledge of American Steel & Wire Company engineers. These engineers know that varnished cambric insulation has a combination of properties that are unmatched by any other one insulation.

To start with, varnished cambric is superior to rubber when it comes to heat resistance and load capacity—it can be used at operating temperatures up to 85°C. And, because of its higher dielectric strength, varnished cambric insulation walls can be thinner than rubber. But unlike rubber, varnished cambric requires a waterproof covering if it is to be continuously exposed to moisture.

Paper insulation is more susceptible to ordinary moisture than varnished cambric. And, although varnished cambric is not as flexible as rubber, it is much easier to handle and simpler to install than paper insulated cables.

Varnished cambric has one big advantage over both natural rubber and paper: It is not affected by oil and grease.

Available Types of American Varnished Cambric Cables

CONDUCTORS:	OUTER COVERINGS:	FINISHES:	ARMOR FINISHES:	LEAD SHEATHINGS:	RUBBER SHEATHINGS:
solid stranded extra-flexible annular segmental	cotton braids asbestos braids tape	black wax firefite U.R.C. slowburning	flat steel tape interlocking metal tape steel wire basket-weave	plain jute served duck tapes reinforced rubber	where lead cannot be used

Varnished Cambric?"

APPLICATIONS

● Impregnated paper is still the standard insulation for high-voltage operation and general power transmission. And rubber is advisable for most low-voltage installations—or even higher voltages when its moisture resistance and flexibility are particularly valuable.

Varnished cambric follows the middle path, and it is often used in place of rubber or paper because of its properties.

Take a high temperature, low-voltage application. Varnished cambric is often used in place of rubber because of its higher temperature resistance, and resulting greater load capacity.

Varnished cambric is also widely used for medium-voltage (up to 5000 v) transmission lines because it is so easy to install, terminate and join. It is ideal for dry locations, and it can be used without a lead sheath because it is not subject to oil drainage.

Varnished cambric is preferred for general wiring in power stations. Typical examples are: Generator leads, insulated bus bars between oil switches, distribution transformers, etc. Oil and grease resistance of this insulation also make it useful for motor leads and transformer connections.

Perhaps the most common application of varnished cambric insulated cables and wires is for general power distribution within manufacturing plants . . . especially in heavy industries where large blocks of power are transmitted for short distances. Bridges, and other structures which require aerial cables, are often serviced with varnished cambric cables that have a rubber jacket. Rubber jackets are preferable in these locations because lead would probably be ruined by vibration.

Always remember that our engineers are willing to help you solve any wire or cable problem that you may have. And there is no obligation. Write today for Bulletin No. 6195-A "Varnished Cambric Insulated Wires and Cables."

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

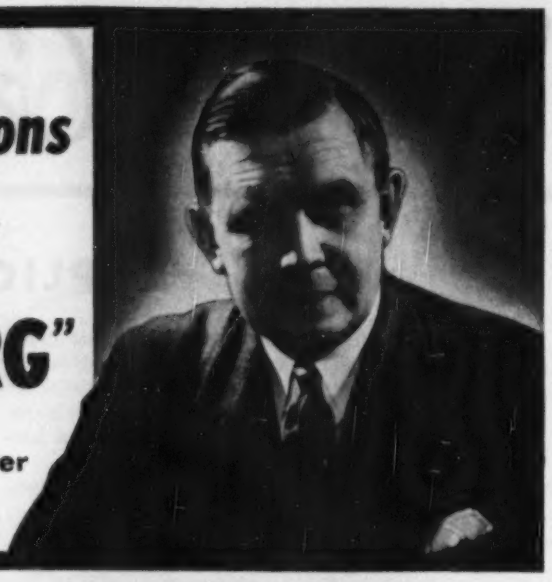
American Varnished Cambric Cables

USS

UNITED STATES STEEL

"Here are 8 Reasons why I specify ORANGEBURG"

— says the Utility Engineer



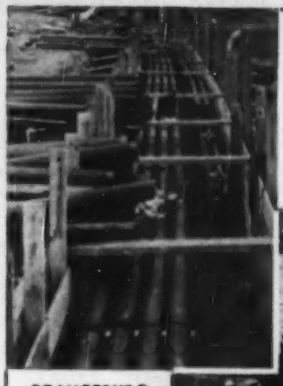
The man in the picture symbolizes the many utility engineers who always specify Orangeburg® Conduit. And here are eight of the numerous reasons why he feels that way.

- Will not corrode. Lasts indefinitely.
- Impermeable wall and tight joints prevent corrosive ground waters from entering.
- Lays faster and at lower cost than any other type of conduit.
- Low coefficient of friction keeps pulling tensions on cable to minimum.
- Protects cable sheath from abrasion when pulled in—also from wear during cable movement due to alternate expansion and contraction with changing loads.
- Resists acids, alkalis, grease, oil.
- Light, easy to handle and tool on the job.
- Tough, resilient—will not crack or break when properly handled.

Cable HEALTH is Community WEALTH

Every industry and business prospers, every home and institution benefits from the uninterrupted flow of power through "healthy" cables. The utility engineer knows this well. Leading public utilities and municipalities therefore use Orangeburg Conduit to provide a time-defying raceway for the permanent protection of electrical services underground. Orangeburg has successfully served the electrical industry for 57 years.

And Orangeburg saves money for these users, too . . . by faster hauling, handling, tooling and laying. Costly delays on the job are further prevented by Orangeburg's complete line of bends, angle couplings, bend sections, union connections, bell ends and other standard fittings. Orangeburg Manufacturing Co., Inc., Orangeburg, N. Y.



ORANGEBURG STANDARD

. . . installed with concrete encasement. The preferred conduit for banks of three or more ducts.

ORANGEBURG NOCRETE

. . . installed without concrete encasement. Its extra heavy wall makes NOCRETE practical for many single or double duct runs.

ORANGEBURG FIBRE CONDUIT

STANDARD Installed with Concrete

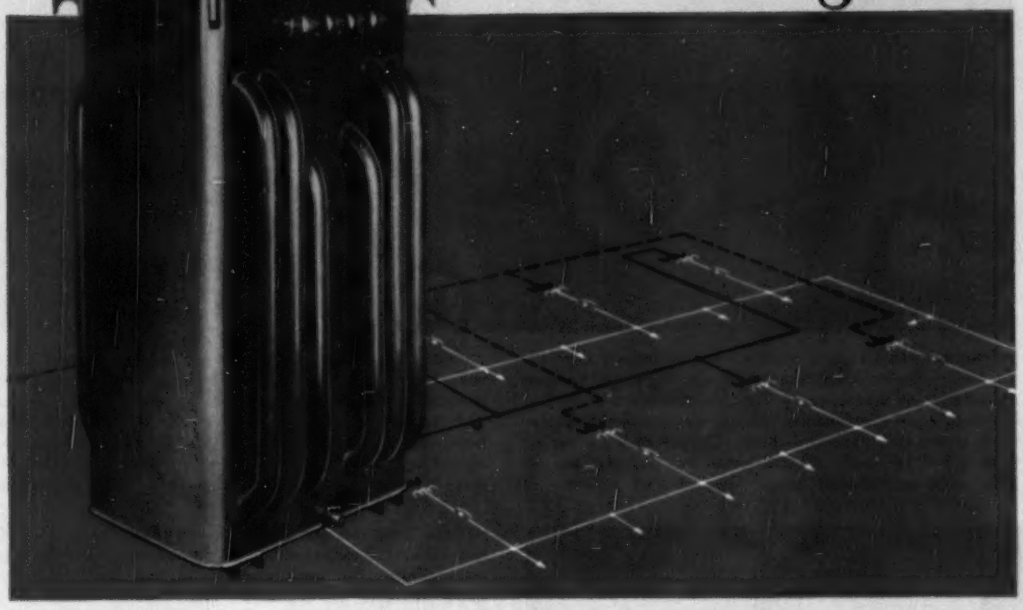
NOCRETE Installed without Concrete

GENERAL ELECTRIC SUPPLY CORPORATION

DISTRIBUTORS, ORANGEBURG FIBRE CONDUIT

Graybar ELECTRIC COMPANY

YOU CAN BE SURE.. IF IT'S Westinghouse



EXTEND NETWORK ADVANTAGES

to "Borderline" Areas

Where areas of your system make it difficult to justify an underground network, Westinghouse Type "S" Transformers help make economical overhead networks possible. Thus, the advantages of greater service continuity and system flexibility can be extended to heavy-load residential sections, light business districts and similar "borderline" areas.

No matter what type of network system you plan, or what your installation problems may be, Westinghouse can help you keep costs down . . . now . . . and in the future.

HERE'S WHY:

Now—There is a Westinghouse Network Transformer specifically designed to answer each of your network problems. In addition to TYPE "S", there are LIQUID-FILLED (oil or Inerteen®), most economical for general use; "ASL" VENTILATED DRY-TYPES, ideal for indoor service; and SEALED DRY-TYPES, the safest transformers ever built. Standardized construction provides lower initial cost and lower installed cost, too. Special hook-up problems are eliminated.

And in the Future—Years of leadership in the design and construction of network transformers show in the high quality and maintenance-free operation of Westinghouse Transformers. In addition, our complete facilities . . . engineers and calculating boards . . . are available to help you in your network planning, to make future expansion more economical.

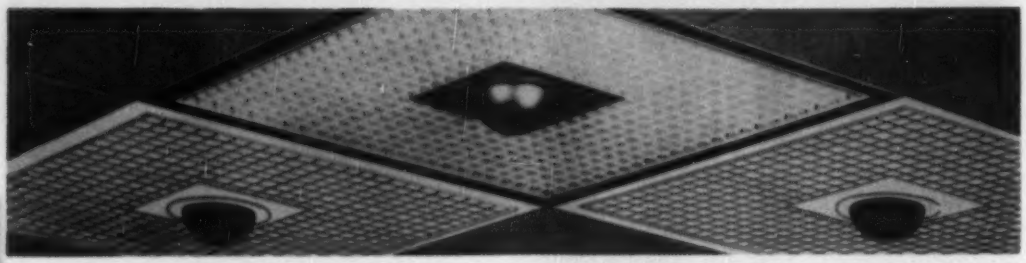
Ask your Westinghouse representative for further information, or write for Booklets B-4082 and B-4002-A. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-70559

Westinghouse

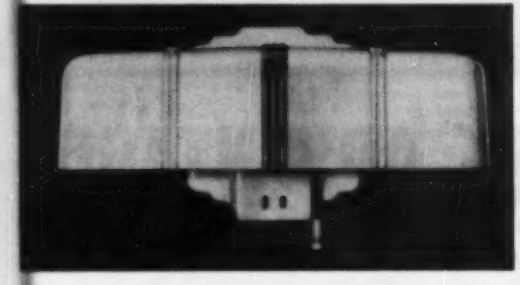
NETWORK TRANSFORMERS

Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver

PRODUCT NEWS



(1) An adaptation of silvered-bowl incandescent lighting, the Silvray Skylike is for commercial use; is claimed to have advantages of simple wiring, light weight, fast installation, low cost, easy maintenance. Ninety degree shielding prevents direct and reflected glare. Output may be varied from 2,500 to nearly 10,000 lumen per unit by use of 150,- 200- or 300-watt lamps. The silvered reflector is permanently sealed and the unit carries its own 87% reflection factor ceiling. Units, 24x24 in., may be recessed in lines, in threes or in checkerboard arrangement, or the unit may be surface mounted; with a semi-silvered lamp bowl and an accessory, is adaptable for directional or accent lighting. Made by Silvray Lighting Inc., 1270 Sixth Avenue, New York, N. Y. Graybar is the distributor

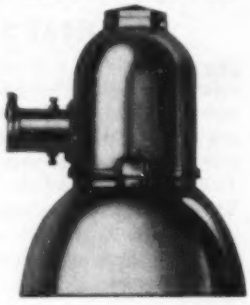


(2) Twin sockets of this wall bracket take two standard 60-watt bulbs, both operated by the porcelain-tipped pull chain. An extra plug-in receptacle has double-wipe bronze contacts. Comes completely wired. Base size is 5½x5 in., fits 3¼ and 4 in. outlet or Gem X boxes. Shade is 11¼ in. long, 3¾ in. wide and 3¼ in. high. Made by John I. Paulding Inc., New Bedford, Mass.

(3) One unit in new S & M Utility Flood-Lite line, the 813 has an enclosed 75-300-watt medium base socket, 10-in. heavy-gage aluminum reflector. A wing-nut adjuster, variety of mountings give flexibility; clear or diffusing lenses. S & M Lamp Co., 119 W. 36th Place, Los Angeles 54

(4) This "Trigger-Start" ballast (below) operates two standard 20-watt fluorescent lamps; is recommended by the manufacturer for both commercial and residential fixtures; features a "brickette" cross section claimed to keep noise to a minimum. Designated as model 89G321, it is 6½ in. long and 2⅜ in. wide; is Underwriters' approved. General Electric Co., Schenectady 5, N. Y.

(5) The L-M Directolite was redesigned recently in stainless steel. Shown is the symmetric style reflector for 2,500-lumen, 6.6-amp. lamp. It also is made in asymmetric design for IES type II light distribution. The Directolite is for street lighting in smaller communities, residential areas and outlying sections. It uses 1,000- to 2,500-lumen series or multiple lamps; is claimed to be easily interchangeable with larger luminaires on the same head when population or traffic growth requires. Made by Line Material Co., Milwaukee 1, Wisc., which also offers a newly designed street lighting bracket.



...and General Electric's Anti-Bulbsnatching Drive is getting underway!

STARTING SEPT. 18

CASH IN ON THIS SALES IDEA!

General Electric's Anti-Bulbsnatching Drive is timed for the peak of the lamp buying season—right when the nights are getting longer. It features the greatest lamp-selling idea ever—*bulbsnatching*—General Electric's famous name for robbing one light socket to fill another!

CASH IN ON THIS ADVERTISING!

Customers will see and hear about the Anti-Bulbsnatching Drive again and again. Full color ads in Post, Life, Look, and Sunday newspaper supplements. Ad messages on spot radio and the Fred Waring Television Show. All will work to bring customers into *your* store.

CASH IN ON THESE DISPLAYS!

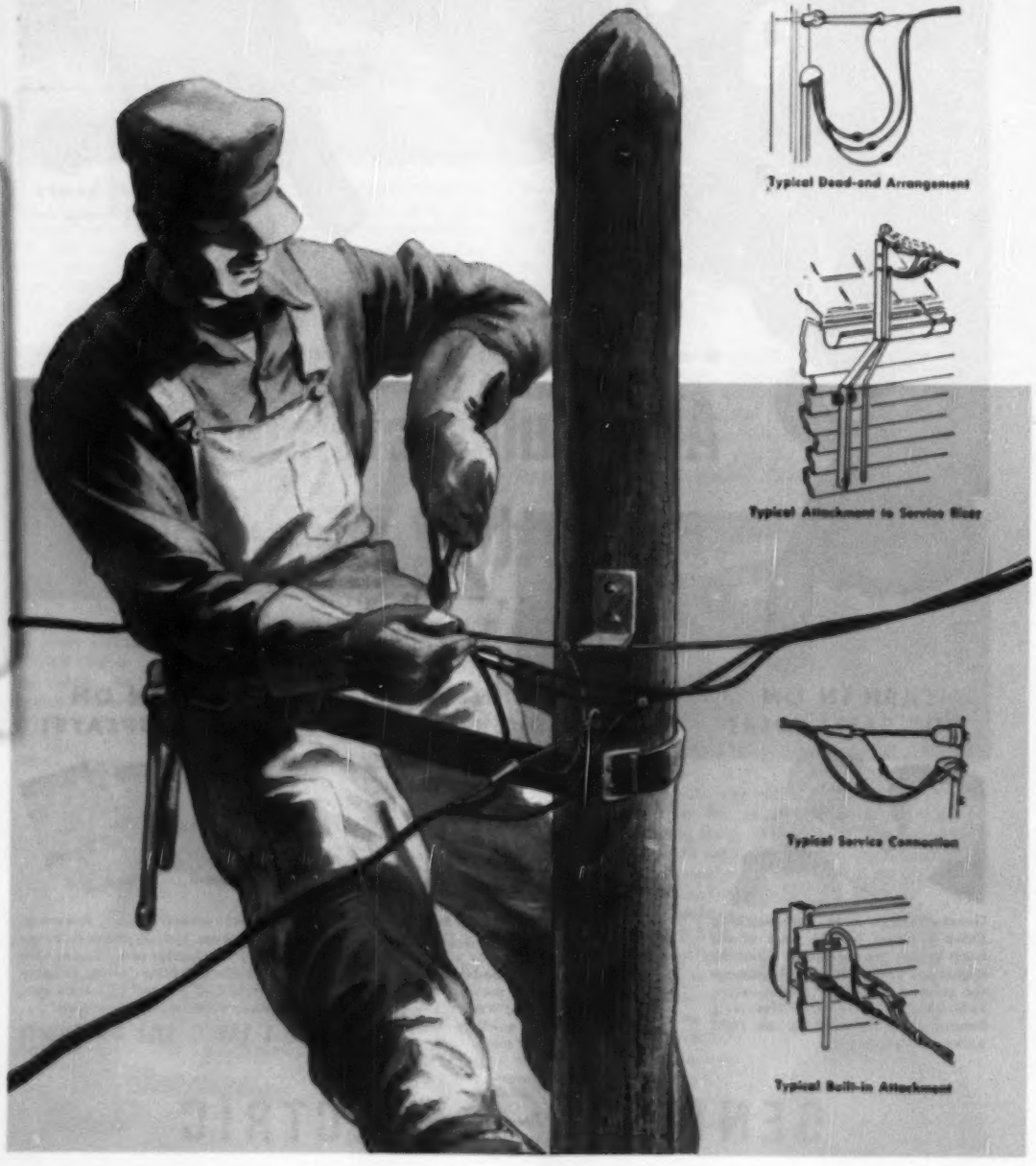
Colorful counter cards, streamer, carton tuck-ins, special price cards—use 'em and watch sales zoom during this Anti-Bulbsnatching Drive. Display plenty of G-E 4-lamp packages, too, because now more than ever...

G-E LAMPS SELL ON SIGHT!

GENERAL ELECTRIC

When Rome Self-supporting Service Cable goes up... your costs go down!

Insulated with RoPrene (Neoprene) or RoLene (Polyethylene)



Typical Dead-end Arrangement

Typical Attachment to Service Riser

Typical Service Connection

Typical Built-in Attachment

Small wonder more and more electric utilities are specifying Rome Self-Supporting Secondary and Service Drop Cable. Its simplicity of construction, its lower cost (up to 25 per cent), compared with conventional Service Drop (Type SD) Cable, will save you money.

HERE'S WHY...

- Ease and economy of installation with less labor and cheaper hardware
- Eliminates crossarms and permits shorter poles
- Longer life in all weather because of its all-resistant Neoprene or polyethylene insulation . . . no braids to rot or festoon
- Less tree trimming because of its high resistance to abrasion
- Conductor accessibility with no common covering to remove
- Less subject to damage by storm and falling limbs . . . will operate SAFELY even if down
- Better voltage regulation because of lower reactance in long and heavily loaded circuits

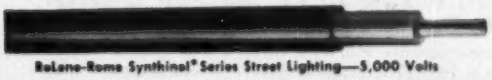
A product of Rome Cable engineering, Rome Self-Supporting Secondary and Service Drop Cable is today's answer to high service installation costs. Its advantages have been service proven by leading utilities. Send for Bulletin RS-4 and see for yourself why it is the accepted cable for economical overhead services.

IT COSTS LESS TO BUY THE BEST

Rated at 600 volts with maximum continuous copper temperature of 60° C.

STREET LIGHTING CABLES

RoZone-RoPrene Series Street Lighting—5,000 Volts



RoLene-Rome Synthinol* Series Street Lighting—5,000 Volts

RoLene Ornamental Pole and Bracket Cable—4,000 to 12,000 Open Circuit Voltage

* TRADE MARK REG.

Rome manufactures a wide range of high and low voltage cables for underground or overhead wiring or series and multiple lighting systems.

- RoZone-RoPrene (Neoprene) offers the ultimate in non-metallic sheathed series street lighting cables suitable for direct burial or duct installation.
- RoLene (Polyethylene) insulated types are a new development and offer considerable economic advantages.
- RoLene (Polyethylene) Belted Ornamental Pole and Bracket (Mast Arm) Cable is an up-to-date design featuring improved construction with small diameter and low cost.

ROME CABLE CORPORATION, Dept. W-9, Rome, N. Y.
Please send me Bulletin RS-4.

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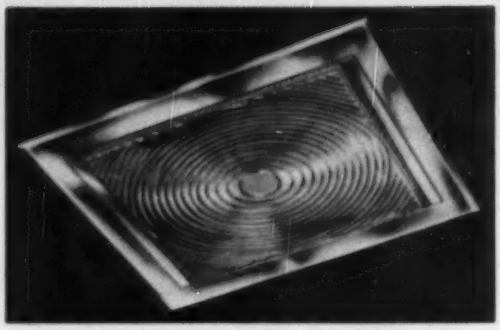
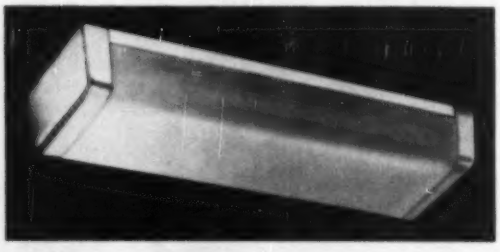


(6) The Fresnel wide-angle crystal lens above is one of three items introduced recently by Pressteel Co., 800 Bancroft, Berkeley, Calif. It has a fine prismatic cut for uniform light distribution; the reverse side of the lens is satin-etched to reduce high brightness. Cataloged as Series 6700, it is available in 100-, 150- and 300-watt units. The other new items (not illustrated) are: No. 1326 fixture for dramatic lighting, which takes two 150-watt lamps for bright illumination and the new type R-30 75-watt independently switched flood or spot; the No. 488 (100-watt) and No. 1015 (150-watt) 60-C wired housing. A wired junction box is attached, permitting the use of standard code grade building wire, type R, T or TW

New Fluorescent System

(7) Benjamin Electric Mfg. Co., Des Plaines, Ill.

A compact, extra-shallow fluorescent lighting system for slimline and 40-watt bipin lamps, called Strip-Line, is available in seven different types. Its shallow channel depth (15/16 in.) is designed for limited-space installations, such as with louverall ceilings, cornice lighting, illumination of glass blocks, charts, murals, etc. It has high-power-factor junction-box type ballasts, mounted remotely from the channel so that the strips may be attached flush with the ceiling; a special terminal block that eliminates wiring, soldering, wire nuts and wire splicing; is constructed so that channels may be locked together without couplings in any one of three ways. It is available in sections for 96-, 72- and 48-in. T-12 and 96- or 72-in. T-8 slimline lamps and for one and two single 40-watt general-service bipin lamps. Channels may be mounted in vertical or horizontal position; come with symmetrical or asymmetrical reflectors.

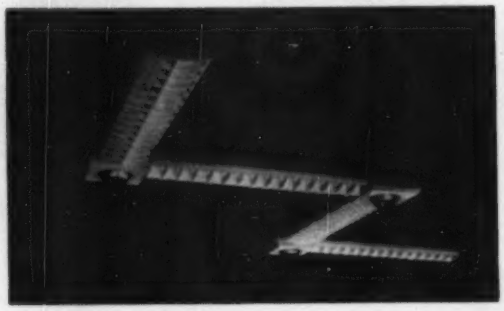


(8) Feature of this Sightron fixture is a Plexiglas base that slips out from its metal frame to facilitate cleaning and bulb replacement. Included in the Good Design exhibition by the Museum of Modern Art, it is made by Lightolier Inc., Claremont and West Side Ave., Jersey City, N.J.

Pylon for Street Lighting

(9) Revere Electric Mfg. Co., 6009 Broadway, Chicago 40, Ill.

Vertical units for boulevard and street lighting have been introduced by Revere as an addition to its line of Pylon-Lites for gasoline service stations. The units are mounted singly or in clusters of two or three. Standard is of heavy-gage steel, the shaft being a one piece tapered octagon. A heavy steel base is welded to the bottom of the shaft and has four 1x48-in. anchor bolts spaced equally on a 14-in. bolt circle. A removable split base cover conceals the anchor bolts. An advantage of these units, according to the manufacturer, is that high illumination on surrounding objects and areas is obtained by maximum horizontal light distribution.



(10) A line of six incandescent spotlight units, called Trimspot, has been added to the Sylvania line. Shown is one of the architectural designs possible by using companion incandescent and fluorescent fixtures. Both single and double Trimspot units, containing one and two 150-watt PAR 38 lamps, match 2- and 4-lamp fluorescent units, made by Sylvania Electric Products Inc., 500 Fifth Ave., N.Y.C.

Laundry and Work Light

(11) Markstone Mfg. Co., 2460 George St., Chicago 18, Ill.

For home laundry and work shops, hobby rooms, etc., an all-white enamel fluorescent fixture comes complete with two 25-watt General Electric Krypton lamps, heavy rubber cord and plug, hanging chain and switch. It is constructed of heavy-gage steel; operates on 110 volts a-c; is 33 in. long, 12½ in. wide, 4 in. deep. Shipping weight is 13½ lb.

Incandescent Luminaire

(12) Westinghouse Electric Corp., P.O. Box 2099, Pittsburgh 30, Pa.

The Magnalaire incandescent luminaire is available in two sizes, 75/100 watt and 150/200 watt. It is a luminous semi-direct fixture; conforms with shape and design of the Magnalux luminaire but has a totally enclosed globe.. Comes with a zinc alloy die-cast ceiling canopy finished in highly polished chromium with slots and a bridge for mounting on the stud of a 3- or 4-in. outlet box.

Eyes Right!

RIGHT LIGHTING

The eyes have rigid requirements in efficient lighting. Smoot-Holman certified illumination meets those requirements with unvarying quality and performance created by superior engineering and skill. Beauty, high efficiency and dependable operation are the hallmarks of the finer lighting equipment that bears the Smoot-Holman label in institutional, commercial and industrial installations.

ILLUMINATION EQUIPMENT
SMOOT-HOLMAN
INGLEWOOD, CALIFORNIA
MADE IN U.S.A.

OFFICES IN P[illegible] WAREHOUSE IN SAN FRANCISCO

magno-tronic

DUAL SILVER POINT — FULLY AUTOMATIC

FLUORESCENT STARTERS

—completely eliminate annoying blinking and flickering of dead fluorescent lamps!

GUARANTEED — FOR ONE YEAR!

PROTECTS — Automatic thermal relay cuts out defective lamps, eliminates annoying blinking and protects all auxiliary equipment.

SIMPLIFIES — Replacement of defective lamp automatically recycles starter circuit. No buttons to push — no replacement of starter.

REDUCES COST — Magno-Tronic starters provide exact timing of electrode heating, preventing excessive loss of emission material, thus assuring maximum possible lamp life.

VERSATILE — Built to operate efficiently over an extended voltage and temperature range.

Demonstration and Literature on Request.

SP-15-20 For use with 15 or 20 watt lamps.

SP-30-40 For use with 30 or 40 watt lamps.

SP-85-100 For use with 100 watt lamps.

Manufactured under U. S. PATENTS

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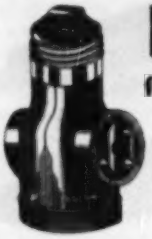
Other Patents Pending

INDUSTRIAL ELECTRONICS CORP.

General Offices & Main Plant: 80 BANK STREET NEWARK 2, N. J.

(13) The Sno-Flake, an indirect incandescent luminaire made by Curtis Lighting Inc., 6135 W. 65th St., Chicago 38, takes either the 300- or 500-watt silvered bowl lamp. The one-piece, die-cast aluminum louver has a geometric pattern said to blend with any decorative scheme. It is open top and bottom, is finished in Fluracite



KULKA Engineered WIRING DEVICES

for LAMPS and LIGHTING FIXTURES

More than a quarter century of specialization in producing soundly-engineered electrical wiring devices is your assurance of top quality products at low cost.

CURRENT TAP

No. 204. In brown Bakelite and ivory Urea. Efficient and lasting. Has shadeholder ledge. 660W-250V.

MOLDED TWIN LITE SOCKET

No. 205. Attractively designed in heavy, brown Bakelite and ivory Urea. Practical unit. 660W-250V.

WEATHER PROOF SOCKETS

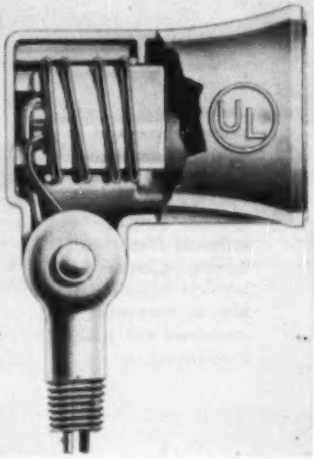
No. 202A (left) Heavy Bakelite shell, with molded Bakelite insert. Bronze contact. No. 203—same style with rubber shell and Bakelite insert. No. 206 (right) Pin type—has suspension hook. No soldering. 660W-600V.

All items listed by UL

Write for Prices and Catalog

KULKA ELECTRIC MFG. CO.

30 SOUTH ST. MT. VERNON, N. Y.



(14) This lampholder for outdoor use with projector and reflector lamps was designed by M. B. Austin Co., Northbrook, Ill., to accommodate physical variations in lamp, socket or lampholder casting. It has a floating socket principle, which permits the socket to move forward or side to side in an eccentric plane. For 150-watt and 300- and 500-watt mogul base lamps

(15) LIGHTMETER—Type PF-13 for checking low illumination levels, indoor and outdoor, has been announced by G-E.'s Meter and Instrument Divisions, West Lynn, Mass.

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*Please include your company's name and your position, since we cannot ask manufacturers to furnish literature unless you do.

ELECTRICAL WEST

Reader Service

The editors of Electrical West will be glad to answer questions on engineering techniques; in the lighting and wiring fields; on the electrical code; on merchandising and appliance markets and other phases of the electrical industry in the eleven Western states

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A TYPICAL INSTALLATION

H7040 SERIES

NEW, SCIENTIFICALLY DESIGNED RECESSED FIXTURES

H5340 SERIES

These new SUNBEAM fixtures represent a real advance in scientific lighting. Controlens* equipped, these fully enclosed recessed troffers provide several types of controlled lighting distributions. High in utilization efficiency and low in brightness from normal viewing angles make these units a positive solution to most critical lighting problems.

Modern in appearance, these fixtures are available in all standard fluorescent and slimline lamp lengths including the 48" T-12, 430 MA lamps. The sturdy lens frames swing open on full-length piano hinges and are released by spring loaded thumb latches. With no permanent depreciation, discoloration or warpage, maintenance is almost negligible.

The H7040 series is available with flat intensive lenses for maximum useful light on the working plane, extensive lenses for low ceiling installations or with the new low brightness lenses. The H5340 series is available with curved Controlens* which direct a small component of the light output on the ceiling giving a more uniform appearance to the ceiling background. For more complete information see your leading electrical distributor.

SUNBEAM LIGHTING COMPANY
777 EAST 14TH PLACE • LOS ANGELES 21, CALIF.

© Holophane Co., Inc.

the troffer it took

10 years to build!

Guth LITE-BLOX

the ONE answer to every troffer need

From 10 years' experience with thousands of recessed troffer problems comes this dynamic development—a complete new "packaged" line that is far more . . .

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- "Hand-Crafted" appearance with tailored trim
- Infinite design freedom—any pattern based on 12" grid
- 20 sizes of popular standard and slimline lamps
- Wide range of diffusing and shielding media

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- One basic unit for 31,360 trouer combinations
- Simplified ordering—one number for a complete row
- Flange types on hand can be quickly converted to teebar—or vice versa

[redacted]

- Complete units ready to install—no joiners
- Precision built on advanced-type machinery—easy to align
- Patented end K.O's assure accurate foot-lengths—no trimming at end of rows

For full details call your nearest GUTH resident engineer or write for Bulletin 8[illegible]-C

Guth LIGHTING

THE EDWIN F. GUTH COMPANY • ST. LOUIS 3, MISSOURI

Leaders in Lighting Since 1902

(16) HINGED STANDARDS—These street lighting standards permit light to be lowered to street level for servicing. They may be adapted to multiple or series circuits; are available in heights from approximately 22 to 33 ft. with mast arms extending 4, 6 or 8 ft. Constructed of 10-gage steel, they come with or without sub-base of ¼-in. steel plate with removable doors. Made by Revere Electric Mfg. Co., 6009 Broadway, Chicago 40, Illinois.

(17) TRAFFIC SIGNALS—Non-corrosible Alumalloy signals and accessories are being manufactured by Killark Electric Mfg. Co., Vandeventer and Easton Ave., St. Louis 13, Mo. They feature one piece construction; can be post or span wire mounted and horizontal or vertical bracket mounted.

(18) FLOODLIGHT—A 250-watt heavy-duty unit, type CA-10, has been added by Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa. It is for applications requiring a rugged unit of low wattage that gives a relatively narrow beam spread.

(19) FIXTURE—A new and lighter-weight Varsity fixture has been developed by Leader Electric Co., 3500 N. Kedzie Ave., Chicago 18. Available for two, three or four 40-watt lamps and for two, three or four slimline lamps in 48- to 96-in. lengths. Eggcrate plastic louver gives 40x40° shielding, swings from either side. Upward light spill gives 40% indirect, 60% direct light.

(20) ENCLOSURES—Surface Lite-Blox enclosures are offered by Edwin F. Guth Co., St. Louis 3, Mo., for use with its standard Lite-Blox recessed troffers. These new enclosures are available in 300° white Permalux or with a primed surface ready for painting.

(21) GUARD—The McGill 5000-LR series combines flood and flash light and extension cord. A concentrating lens is fitted into the end of the guard, which has a reflector and an outlet for power tools. It is inspected by Underwriters'; made by McGill Mfg. Co., Inc., Valparaiso, Ind.

(22) LAMPHOLDER—A Cam-Loc lampholder made for use with the conventional type fluorescent bipin lamp is offered by Lloyd Products Co., 225 Chapman St., Providence, R. I.

(23) FIXTURES—Two new units for school or office have been announced by Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14. These 4- and 8-ft. fixtures are available with or without louvers. Construction is all steel; push-type lampholders and 2-position louvers are features. The 4-ft. unit uses two 40-watt T-12, the 8-ft., two 75-watt T-12 single-pin lamps.

(24) BALLAST—An addition to the G-E line is a ballast for series operation of slimline and 40-watt instant-start fluorescent lamps. It is designed for use with two 48T12 lamps.

(25) F LAMPS—A line claimed to give a more mellow white than former tubes has been announced by the Westinghouse Lamp Division in Fairmont, W. Va. The lamps use a recently developed phosphor that produces light with a balanced color spectrum all the way out to the deep red end.

(26) F UNITS—Magna-Flo fluorescent lighting units with Springlox lampholders, designed for the new T-12 slimline lamps, have been announced by Benjamin Electric Mfg. Co., Des Plaines, Ill.

Urgently Needed!

The addition of

1000 MEN!

to the Lighting Sales and Service Staffs of the Electric Light and Power Companies to Help Put Over the Planned Lighting Program

Wherever the full support of personal sales follow-up is given to the educational and promotional phases of the Planned Lighting Program, the soundness of that program is amply demonstrated.

Unfortunately, most lighting sales and service departments are undermanned. They do not have the personnel with which to do the type of selling job required to take complete advantage of the load-building opportunities existing today in Industrial Lighting and all other types of lighting.

LIGHTING SALES DEPARTMENTS SHOULD BE REBUILT. The facts are, that too many departments are below 1940-41 levels, while—with increases in population, factories and commercial establishments—the personnel in these departments should be at the highest levels in history!

Now that generating capacity shortages are definitely behind us, and reserve capacity is steadily increasing, the number of men engaged in lighting sales ought to be increased substantially, even doubled and tripled!

Men with the necessary basic education and training are now available. These men should be trained to familiarize themselves with the production and lighting problems of their customers. They should be trained to effectively portray the benefits of good lighting and the importance of Industrial Lighting Equipment which meets nationally recognized standards.

INSISTENCE UPON HIGH QUALITY LIGHTING UNITS IS ESSENTIAL, to the success of any lighting plan. And bound up in the lighting plan's success is the reputation of the utility company in the mind of the buyer. For in the final analysis, it is the utility company which will share at least part of the blame for failures that may result because of inadequate or sub-standard lighting equipment.

BUYERS MUST BE GIVEN THE FACTS about the importance of high quality lighting equipment to the lighting plan. It is of vital importance therefore, that these new lighting men be trained to provide customers with all of the facts about the basis for determining standards of durability and performance in Industrial Lighting Units.

The RLM Standards Institute will gladly assist Electric Light and Power Companies in such training by providing, at no cost, adequate quantities of the new RLM STANDARDS Specification Booklets. Recently revised and completely up-to-date, this book contains the RLM standard specifications for 18 fluorescent and incandescent Industrial Lighting Units. Also included in this book, are facts about the inspection and certification program sponsored by the Institute which are valuable in giving the buyer a complete understanding of the RLM Label and its importance to him.

For copies and other assistance, write RLM Standards Institute, Suite 815, 326 W. Madison St., Chicago 6, Ill.

A timely Message to the MANAGEMENTS of the Nation's Electric Light and Power Companies published in the interest of the entire Lighting Industry

RLM STANDARDS INSTITUTE INCORPORATED

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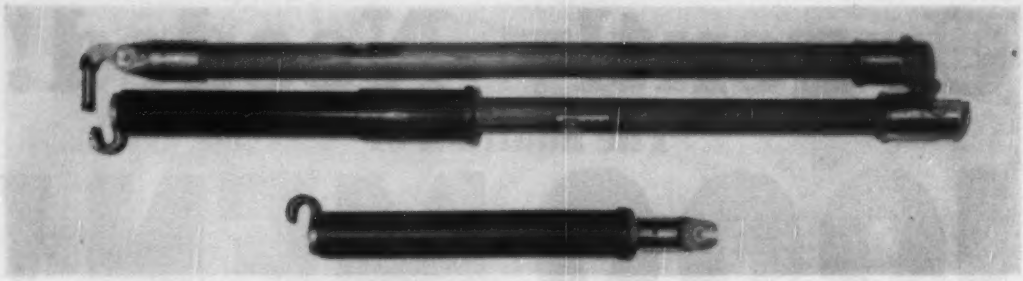


(27) An improvement in clampstick design eliminates use of external operating mechanisms, gives quicker and easier installation, according to the manufacturer, James R. Kearney Corp., 4236 Clayton Ave., St. Louis 10, Mo. The new Saf-T-Clampstick shown uses a strong steel spring to hold the clamp in the recess of the clampstick head. After clamp is positioned and tightened into the line, a quarter-turn of the pole locks clampstick hook in open position for removal from the eye of the clamp. By eliminating external operating mechanisms stronger and more rigid clampsticks are secured, according to the manufacturer. Available on straight or hinged poles or in fit-on design.

Construction and Maintenance Bodies

(28) Four Wheel Drive Auto Co., Clintonville, Wis.

Featuring a multiple-choice standard auxiliary equipment system, a new line of utility and telephone line construction and maintenance bodies has been designed for use with the manufacturer's recently announced Model LD four wheel drive chassis. The basic construction body is a platform body built of 12-gage safety tread steel plate. It measures 90 in. wide with a standard length of 10 ft. and optional lengths, either shorter or longer, available. The operator may select and mount auxiliary equipment to fit requirements.

The new model U9 maintenance body has outside dimensions of 9 ft. long, 90 in. wide. The 3-section, all-steel top protects body load and telescopes to give space for winch and derrick operation. Fourteen-inch deep side compartments have both vertical and horizontal doors; a winch opening is provided in the body, which also has compartments for poles and derrick legs. A variety of optional equipment is available.

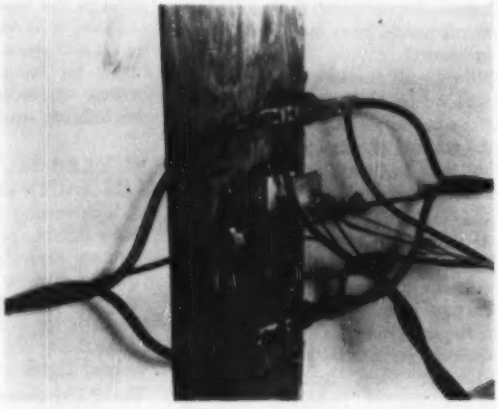
Safety Switch Line Completed

(29) Square D Co., 6060 Rivard St., Detroit 11, Mich.

The newly designed 100- and 200-amp. safety switches conform to the general features of 30- and 60-amp. sizes announced last fall. Type A switches for heavy-duty industrial service feature a full cover interlock that locks the switch on or off. The cover can be locked, with 1, 2, 3 or 4 padlocks of varying sizes and shapes. Current-carrying parts are silver plated and blades are visible for quick checking of switch operation. Line terminals are dead front, protected by a hinged arc chamber.

Quick make and break action is given by the simple mechanism, with no dead center. A magnetic plate in the arc chamber cover adds to the high rupturing capacity, the manufacturer states. Jaws and fuse clips are steel reinforced to exert positive pressure.

Types C and D for standard industrial duty and general-purpose duty respectively are similar in appearance and dimensions to type A, with details differing to meet service demands.



(30) A new method of tapping 1-to-4 services from self-supporting secondary cable has been announced by Fargo Mfg. Co., Poughkeepsie, N.Y. It involves cutting the two hot legs at a point corresponding to the center of the pole. The hot legs are then fanned out and the bus on the multiple-tap bracket is left just long enough (approximately 7 in.) to give required spacing. In making the installation, it is recommended by the manufacturer that all hardware on the messenger be left bare but that the multiple tap be left taped. More details from Fargo

LOSS OF MY WEIGHT
IN ENGINE WEAR
—ABOUT TWO OUNCES—
WILL RUIN YOUR ENGINE

Your engine weighs hundreds of pounds, but the loss of 2 ounces by wear—little more than the weight of the canary—will ruin it!

It's Acid Action—not friction—that causes most engine wear

Shell Research discovery counteracts Acid Action, prolongs engine life

• Few realize it's corrosive Acid Action—not friction—that causes up to 90% of engine wear. In typical "on and off" operation, your engine never warms up to efficient operating temperature.

Combustion is incomplete. Partially burned fuel gases and moisture attack the metal surfaces *chemically*. Shell scientists worked 9 years developing a new, unique "X" safety factor to counteract this biting acid.

Now 2½ millon miles of road testing, plus millions of miles of use by motorists, have proved that Shell X-100 Motor Oil prolongs engine life. This oil, long famous for its protection at sustained high speed, now brings this additional safeguard for every mile you drive.

For passenger cars and light trucks

SHELL
X-100
MOTOR OIL

It's Incomparable!

If you've ever been up on a 50-foot stick when your life depends on the quality of the belt and safety strap you use, you will appreciate the high quality and care that is so much a part of all Klein equipment. When life's at stake, there can be no compromise with quality. Old timers know that Klein equipment has stood for quality in linemen's tools and equipment—"since 1857."

ASK YOUR SUPPLIER

Foreign Distributor:
International Standard Electric Corp.
New York

If you have not received a copy of the new Klein Pocket Tool Guide, write for one. It will be sent without obligation.

Mathias **KLEIN** & Sons
Established 1857 Chicago, Ill., U.S.A.
1200 BELMONT AVENUE CHICAGO 18 ILLINOIS

Pintype Insulator

(31) Victor Insulators Inc., 30 Maple St., Victor, N. Y.

This new insulator (No. 26) was designed for raising insulation levels on present or proposed low-voltage lines, according to the manufacturer. It has a rated 60-cycle dry flashover of 95 kv. and a wet flashover of 60 kv. According to the manufacturer, this insulator needs little maintenance in fog and contaminated regions because of its self-cleaning design and long (15 in.) leakage distance. It has a nominal voltage rating of 27 kv; can be supplied plain or radio-freed.

All-Steel Connector

(32) The Thomas & Betts Co., Inc., Elizabeth 1, N. J.

A new ⅜-in. all-steel 90° angle connector, cataloged No. 321, is for armored cable sizes 14-2 and 3 through 10-2 and for ⅜-in. flexible conduit. The locknut has been improved by case hardening. Once tightened, it will not slip, according to the manufacturer. The picture shows the patented hooks holding the top and the peep hole for inspecting the ABC bushing. The connector bushing inside the box is made of double thick, folded over steel; protects the insulation on type T or TW wire. Underwriters' approved.

"Light Magic"

FOR WORKING WONDERS in PLANNED LIGHTING!

"Pittsburgh" Permaflector

TWO NEW 48" and 96" SLIMLINE LUMINAIRES

THE "WASHINGTON" SLIMLINE LUMINAIRE features an egg-crate louver bottom and Skytex satinol glass side-panels. It is made in 2, 3 and 4 lamp models. Standard operation is 425-MA with T-12 Lamps. Bridge-truss construction assures a unit which "hugs" the ceiling when it is surface mounted.

THE "HARRISON" SLIMLINE LUMINAIRE, in 2, 3 or 4 lamp models. Gracefully curved side-panels, flat bottom-panels of Alba-Lite glass distinguish this modern slimline luminaire. Companion incandescent units are designed especially for use with the "Harrison" and other Presidential Fluorescent Luminaires.

The flexibility of Pittsburgh Permaflector Lighting Equipment is a modern miracle of design and construction.

For example—Pittsburgh Permaflector Slimline Luminaires are available in 48" and 96" lengths. They may be surface or pendant mounted, individually or end-to-end. When used with companion incandescent down-lights, they can be installed to form squares, rectangles, "T's", cross-overs, checkerboards and other patterns.

Such flexibility allows you full creative expression and makes possible "custom designed" lighting results with economical *standard* equipment.

Write today for more information on these versatile units.

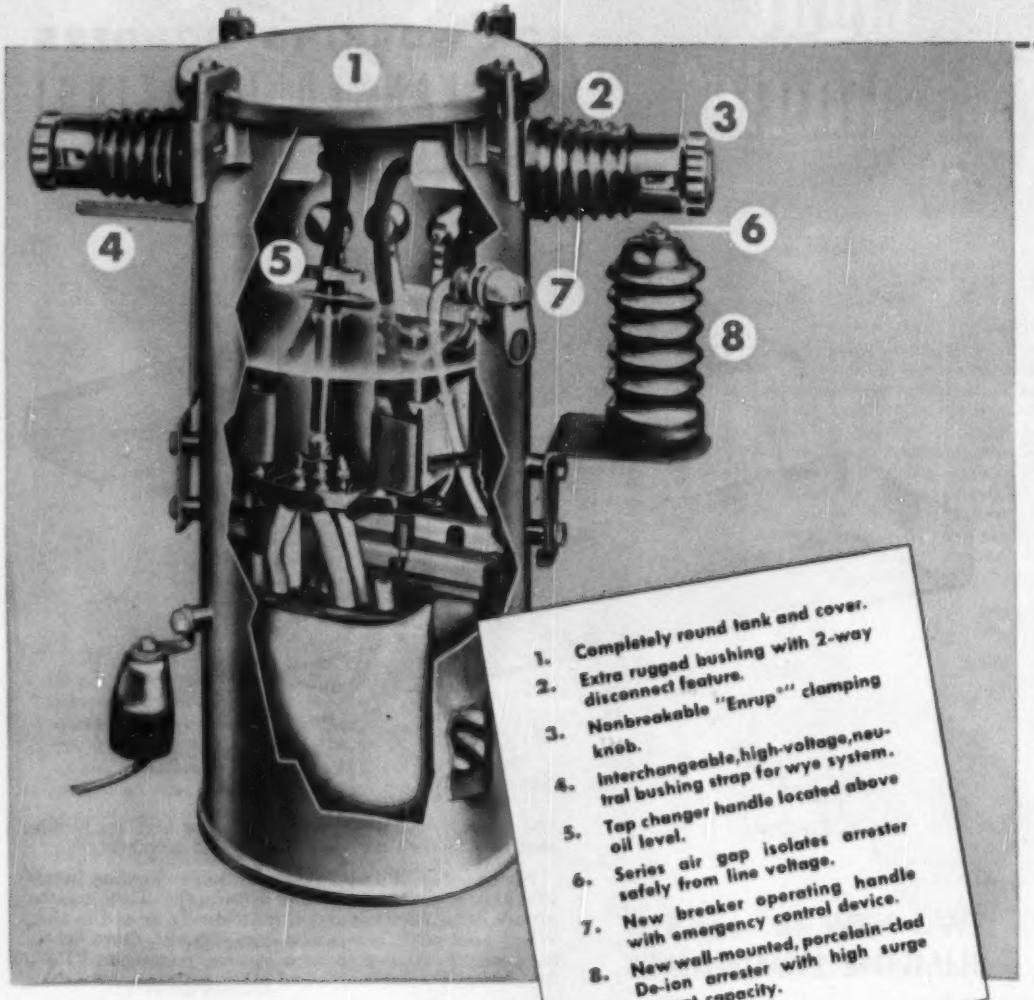
PITTSBURGH REFLECTOR COMPANY

406 OLIVER BUILDING • PITTSBURGH 22, PENNSYLVANIA

MANUFACTURERS OF FLUORESCENT & INCANDESCENT LIGHTING EQUIPMENT

Permaflector Lighting Engineers in All Principal Cities

YOU CAN BE SURE.. IF IT'S
Westinghouse


1
2
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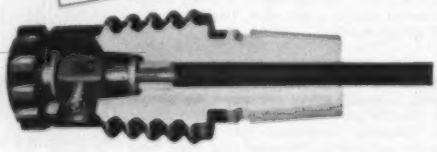
1. Completely round tank and cover.
2. Extra rugged bushing with 2-way disconnect feature.
3. Nonbreakable "Enrup"* clamping knob.
4. Interchangeable, high-voltage, neutral bushing strap for wye system.
5. Tap changer handle located above oil level.
6. Series air gap isolates arrester safely from line voltage.
7. New breaker operating handle with emergency control device.
8. New wall-mounted, porcelain-clad De-ion arrester with high surge current capacity.
* T.M. Reg. U. S. Rubber Co.



IMPROVED HIGH-VOLTAGE BUSHING . . . two to three times stronger than previous bushings. All high-voltage live parts including line electrode of isolating gap enclosed in porcelain. "Enrup" knob eliminates danger of bushing breakage during shipment, storage, transportation to job site and during installation. Leads may be inserted from either side and hand-tightened by simply turning the "Enrup" insulated knob. Tests show this connection clamps line leads twice as tightly as any previous bushing.

ANNOUNCING

A NEW "CSP" TRANSFORMER

Meets ASA and EEI-NEMA Standards

The newest in the line of Westinghouse "CSP" Distribution Transformers, simplifies installation and stocking problems. Like all "CSP" (Completely Self-Protecting) Transformers, this new design has both lightning and thermal protection built in... features that help *cut your distribution costs.*

IMPROVED DESIGN . . . SIMPLIFIES INSTALLATION . . . SAFER TO WORK ON . . . The completely round tank provides most effective seal, allows more free working space between transformer and pole and eliminates looping high-voltage leads.

SIMPLIFIES STOCK PROBLEMS . . . Readily convertible for either wye or delta systems. Class A Transformers, with lightning arresters for both hv leads serve delta systems; Class B-1, with one arrester only, for wye. Companies operating both systems need stock only Class B-1 with a spare supply of arresters. To convert to Class A, simply remove the neutral bushing strap and replace with a hv De-ion® arrester.

Available in ratings of 5000 volts and below and 100 kva and below. Also available in conventional models. Ask your Westinghouse representative for further information on the Type "RW", or write for DB 46-100 "CSP", Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-70571

Westinghouse "CSP" TRANSFORMERS

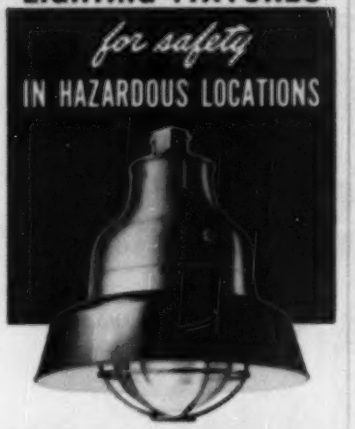
Plants at Berkeley, Calif.; Sunnyvale, Calif.; Emeryville, Calif.; Los Angeles; Portland; Salt Lake City; Seattle; Denver.

Rely on Quality—

PYLE-NATIONAL INDUSTRIAL LIGHTING FIXTURES

for safety

IN HAZARDOUS LOCATIONS



EXPLOSION PROOF

Pyle-National LE Series: Class I, C and D

For use in locations where highly flammable materials are manufactured or handled.

Rugged, flame-tight cast aluminum alloy housings render internal explosions harmless, and insure safe operating temperatures. Threaded construction permits easy access to interior for wiring and lamp replacement. Available in many types and sizes.

DUST-TIGHT

Pyle-National DE Series: **Class II, Groups, E, F and G**

For use in locations where flammable dusts are present in quantity.

Strong, one-piece cast aluminum alloy housings are designed to exclude dust from the interior and to avoid accumulation of dust on the exterior surface. Available in many types and sizes.

Consult the new PYLET Catalog for complete line of explosion-proof supporting PYLETS for lighting fixture mounting.

THE PYLE-NATIONAL COMPANY

1334 N. KOSTNER AVENUE CHICAGO 51, ILLINOIS

Pacific Coast Sales Office

25 Beale Street, San Francisco 6, Calif.

BULLETINS ETC.

(33) CABLE—"Applications of Neoprene and Cold Rubber in Electrical Cable" by Carl E. Huxley, engineer in charge of development, Western Insulated Wire Co., is available in reprints from the manufacturer, 2425 E. 30th St., Los Angeles 58. Cold rubber as an insulating material and Neoprene as a jacketing material for portable electric cords and cable are discussed and compared with other polymers. The paper, first published in "India Rubber World," explains how cold rubber over conductors will take a partial cure before assembly and vulcanization and points out the practical advantages of Neoprene as a cable jacket.

(34) SOLDERLESS CONNECTORS—Bulletin 750 from Buchanan Electrical Products Corp., Hillside, N. J., describes the company's improved line of Underwriters' approved "pressure connectors" for solderless splicing and terminating of electrical wires. These new open-end splice caps insure that wire insulation is always flush with the splice cap for maximum circuit protection and that wires are inserted to the full depth of the splice cap for maximum joint efficiency. Two sizes of splice caps are all that are required for most frequently used combinations of two or more wires ranging from two No. 18 to three No. 8. The hand-operated tool, which installs both sizes of splice caps, also installs Termend lugs on all wire sizes from No. 16 to No. 8.

(35) FUSE LINKS—Bulletin 104-B from W. N. Matthews Corp., 3850 Dolor St., illustrates and describes all types of primary Universal Matthews fuse links having various time current characteristics to suit individual needs. Also shown are the new Slofast links having delayed time current characteristics not obtainable in primary fuse links. In addition, the manufacturer's fuse links for open link type cutouts and secondary fuses are included.

(36) MINIATURE BULBS—How miniature lamp bulbs can be used in toys, specialties and premiums is the subject of a new booklet, "The Light Touch" (3-042) from General Electric's Lamp department, Nela Park, Cleveland, Ohio.

(37) OUTDOOR FLUORESCENTS—The Half-Lite, introduced by W. H. Long Co., 114 W. Illinois St., Chicago 10, is described in catalog No. 550. These come in 2-, 4-, and 6-tube models, 4 ft., 8 in. long, half round with flat back.

(38) TRANSFER MECHANISMS—Bulletin DA50 with inserts describes the line manufactured by G&W Electric Specialty Co., 7780 Dante Ave., Chicago 19. Operation of three different transfer mechanisms is outlined in detail in separate inserts. All three are for connecting one load circuit to two feeder circuits (a preferred and an emergency power source).

(39) BREAKERS—Bulletin 3410 from Heinemann Electric Co., Trenton 4, N. J., describes fully magnetic non-thermal, non-enclosed general-purpose circuit breakers.

(40) Q FLOORS—A vest-pocket booklet entitled "How to Wire and Estimate Q Floors" is available from General Electric Co.'s Construction Materials department, Bridgeport 2, Conn. Publication number is 18-90UF.

(41) INCANDESCENT LIGHTING—A new catalog of its equipment is available from Art Metal Co., 1806 E. 40th St., Cleveland 40, Ohio.

(42) DEVICES—The newly compiled "Abridged Listing" issued by Crouse-Hinds Co., Syracuse, N. Y., contains more than 85% of the C-H line of Condulets, plugs and receptacles, industrial lighting fixtures, controls, panelboards and signalling devices. It may be ordered as catalog 3100.

(43) LIGHTING—Guide L50 from Garden City Plating & Mfg. Co., 1750 N. Ashland Ave., Chicago 22, covers fluorescent and slimline ceiling luminaires and incandescent down lights and spots.

(44) F LINE—Leader Electric Co., 3500 N. Kedzie Ave., Chicago 18, describes its 1950-51 line in a new catalog.

(45) DIMMERS—Bulletin 76 from Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y., describes that company's Radiastat dimmers for lighting control in theaters, auditoriums, churches, schools. Although designed primarily for lamp dimming, Radiastats are suitable for industrial or laboratory use where a-c voltage applied to the load must be adjustable.

(46) MOTORS—Applications from U. S. industry are contained in a pictorial sheet from Sterling Electric Motors Inc., 5401 Anaheim-Telegraph Road, Los Angeles 22.

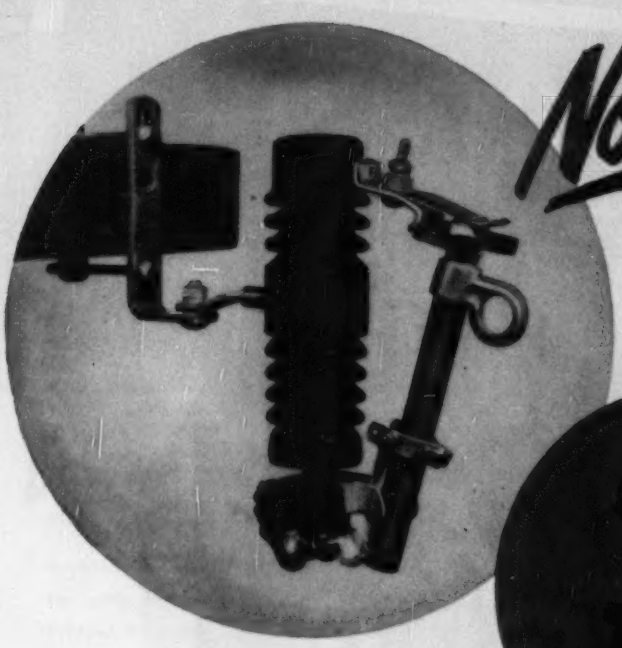
(47) SOCKET SCREWS—Small wire-size multiple-spline socket cap screws and set screws are described in Bulletin 881 from the Bristol Co., Waterbury 20, Conn.

(48) TIMING DEVICES—An 8-page catalog on electrical timing devices is available from the Haydon Mfg. Co., Torrington, Conn., as Catalog 323.

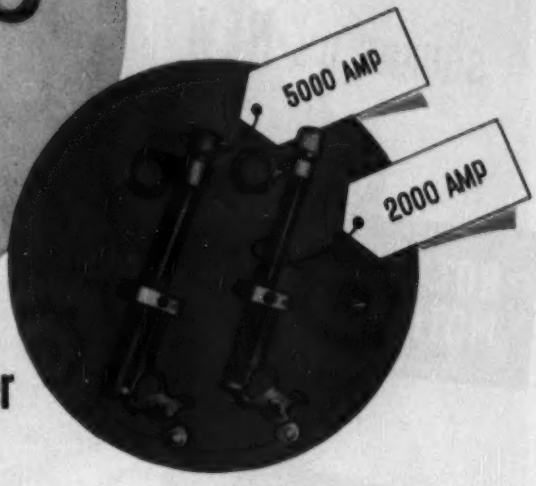
(49) POTHEADS—Gasketless potheads are described in Bulletin AA50, "Type St-Sodertite Potheads" from G&W Electric Specialty Co., 7780 Dante Ave., Chicago 19.

Fill in the postcards on page 33

To get more information on new products and to order catalogs or bulletins mentioned in this section, fill in and mail the bottom postcard on page 33. Electrical West Reader Service has been expanded to include information on any department in the magazine. Use the second card on page 33 to ask questions or make suggestions.



Now! 5000-amp interrupting rating...



simply by changing fuseholder

General Electric 5.2-kv and 7.8-kv open-drop-out cutouts are now available with a 5000-ampere interrupting rating for high-capacity distribution circuits.

This new heavy-duty cutout is identical with the standard cutout (2000 amp interrupting rating) except for the fuseholder. Standard cutouts already in service can be converted to the heavy-duty rating in a matter of seconds—simply by changing the fuseholders. The same fuseholder is used on either 5.2-kv or 7.8-kv cutouts.

G-E ADVANCED DESIGN ALSO GIVES YOU

GREATER ELECTRICAL CLEARANCE—NO UNNECESSARY FUSE BLOWING Electrical clearances are increased by solid porcelain insulator with cemented-in supports instead of troublesome metal clamps. Mounting support is on *opposite side* of porcelain from all live parts, preventing birds and animals from bridging the insulator and blowing fuses.

INSULATOR PROTECTED AGAINST STRESSES DURING RECOIL Because fuseholder is close-coupled to insulator, recoil force of fuseholder is directed along center axis of porcelain, greatly reducing stresses in porcelain. Shock absorbers prevent impact from being transmitted directly to porcelain.

CONTACTS PROTECTED FROM CORROSION Silver-plated contacts are shielded from weather and protected by factory-applied grease which seals out dirt and prevents oxidation. Hinge guides steer fuseholder into upper contacts and prevent contacts from shifting during wind or pole vibration. The same clean areas on the contacts come together each time, keeping contact resistance low and preventing overheating.

Apparatus Department, General Electric Company, Schenectady 5, N. Y.

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

GENERAL ELECTRIC

ANOTHER EXAMPLE OF

DESIGN LEADERSHIP*

SQUARE D's NEW MAGNET-OPERATED VALVE

Fast Operation—Direct-acting magnet . . . low inertia . . . up to 600 cycles per minute on intermittent duty basis.

Low Pressure Drop—Internal cross-sectional area greater than ¼" pipe area . . . minimum resistance to flow.

Long Life—Pressure-balanced rotor . . . manganese-bronze valve body . . . hardened magnet parts . . . bronze oilite pivot bearings.

Low Power Consumption—Magnet coil requirement 38 VA at 60 cycles—inrush 215 VA.

Compact—Unique valve design permits small magnet structure . . . overall valve size only 5¼" x 6½" x 4".

Accessible—Valve body or magnet structure removable without disturbing pipe connections . . . magnet coil easily changed.

Easy Installation—Valve mounts in any position . . . cast base with 3-point mounting reduces distortion possibility.

Pressure Range—Efficient operation on air pressures up to 100 p.s.i.

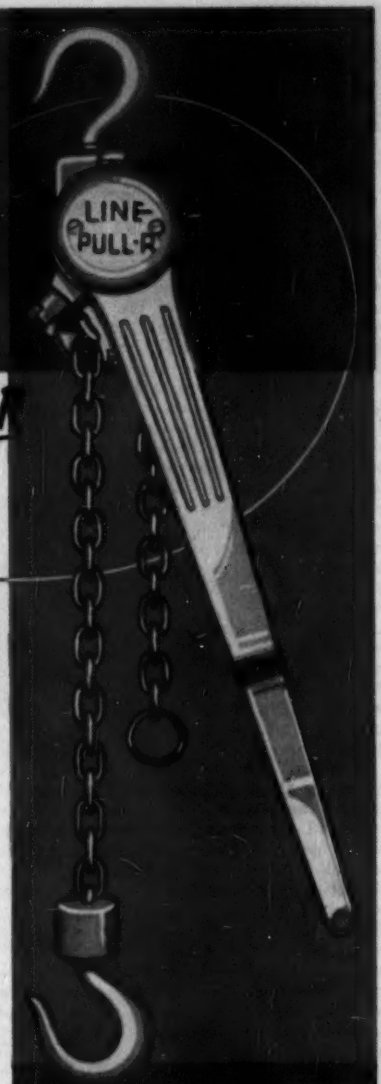
Write for **Bulletin 9043 Type C, Square D Company,** 4335 Valley Blvd., Los Angeles 32, Calif.

SQUARE D COMPANY

DETROIT · MILWAUKEE · LOS ANGELES

SQUARE D COMPANY CANADA LTD., TORONTO • SQUARE D de MEXICO, S.A., MEXICO CITY, D.F.

For *ANY* Pulling or Lifting Operation use the New Improved KEARNEY Line Pull-R



DO THE JOB BETTER-FASTER

This light weight (aluminum alloy) low cost utility tool is designed to handle almost any pulling or lifting job efficiently. By eliminating dangerous, slow, makeshift methods, it pays for itself and increases the safety factor on any job. The mechanism and automatic brake are fully enclosed and lubricated for life. This versatile tool is available in capacities from ¾ to 6 tons. For complete information including weights, sizes and prices, write for Bulletin No. 18-45.

KEARNEY Hi-Dielectric Rope

DEVELOPED SPECIFICALLY FOR THE POWER AND TELEPHONE INDUSTRIES

By a special treatment of individual fibre before stranding the high tensile strength of pure Manila fibre is maintained and longer service life is assured.

Dry samples of Kearney Hi-Dielectric Rope withstand 100,000 volts per foot for 5 minutes without evidence of heating or deterioration. Comparative tests show the wet electrical resistance of Hi-Dielectric Rope to be 20 to 30 times that of untreated rope. Higher dielectric strength when wet results from the resistance to moisture of the impregnated fibres. Less moisture absorption also means longer service life through the elimination of mildew and rot. Kearney Hi-Dielectric Rope contains no ingredients injurious to the hands.

Write for complete information on Kearney Rope, including Safe Load values and proper care and maintenance.

West Coast Distributor: MAYDWELL & HARTZELL

JAMES R. KEARNEY CORPORATION
4224-42 Clayton Avenue
St. Louis 10, Missouri
Canadian Plant: Guelph, Ontario

JAMES R. KEARNEY ST. LOUIS, MO.

BETTER CONSTRUCTION *Safer* MAINTENANCE

ELECTRA'S HUSBAND

THE DEATH OF THE SALESMAN

"DO YOU know that more than a hundred and fifty good appliance salesmen have been fired by dealers in this area in the last month?" remarked one of my companions at the luncheon table one day about two months after the start of the Korean half-war.

"That's just like throwing $150,000 out of one of the windows on the Top o' the Mark," another mused. "What in hell would make a dealer let good men go at a time like this? It must have cost at least a thousand dollars to train each of those men to say nothing of the time involved. And all of us can remember how hard it was to get good sales people a couple of years ago."

"Don't put all of the blame on the dealers," one of the group said. "I know a distributor who let five salesmen out as well as his advertising and promotion man. He only kept his sales manager."

"I think I know the answer," spoke up one of those who had only been listening up to that time. "It's the good old American hungriness to make a fast buck. *Laissez faire*, I think they call it. If you can sell your stuff without salesmen, sell it and save the expense. If the public wants your appliances badly enough to pay an extra ten or twenty-five bucks for 'em, mark 'em up and take the additional profit. Make all you can while you can. Tomorrow the government or the manufacturer may put you out of business."

"It's a rotten shame to lose all of that sales ability and sales potential," I commented. "Probably every one of those salesmen would make excellent members of the electrical industry. But if they react like one of them did who came into my office looking for a job, we'll never see them again. This boy was a veteran, married, with two youngsters. Was buying his own home. He worked for one of the dealers down the peninsula and was doing exceptionally well too. He's plenty bitter now because he was let out with little or no warning. He says he never again will work as an electrical salesman."

"You can't blame him," someone said. "The dealer he worked for was probably having the same kind of experience as one I know about across the Bay. This dealer got his month's allotment of television sets one day last week. He had three sets sold before the shipment arrived. Then he sold ten more the very first night he displayed them. So he took the last half dozen and put them away in his basement to parcel out to friends or good customers who might want a set to watch the football games this fall. He didn't need any salesmen. The public took the stuff away from him."

"This scare buying takes a funny course sometimes," said a distributor member of the group. "One of the city's really prominent citizens called me up and asked if I would send one of our men out to make a complete survey of his water heating equipment. The installation was about fifteen years old. He said if there was the slightest doubt about the condition of the equipment, he wanted a duplicate installation put in that could be cut over in case the old equipment failed. Even when I told him that never during the last thirty years had we ever been out of repair parts for that make of heater, he felt hurt when I assured him that his worries were unnecessary."

"You fellows want to remember that the dealers aren't entirely to blame," one individual interrupted. "The salesmen haven't been above making a quick buck themselves. I heard about a case in Fresno the other day. One of the big stores down there still had an outside crew. One of these salesmen was calling on housewives in the best section of town and telling them if they had a refrigerator that was more than three years old, his boss recommended that they buy a new one. Chances were, he told them, that they would not be able to get another new refrigerator for fifteen years. He sold fourteen refrigerators in two days. Then one housewife called the store to find out if his story was true. That night he was fired, and with good reason."

There was a lull in the conversation. A southern Californian, who up to this time had been an interested listener, began talking.

"You folks up here haven't been troubled by one of the real scourges of the appliance business like we have down South," he said. "I mean the 'discount' racket. Back before the Korean emergency nobody in Los Angeles paid the list price for anything electrical. They shopped around in the regular dealers' stores until they found the model of the television set or the washing machine they wanted, and then they went to a discount house and bought for somewhere between ten and twenty-five per cent off, depending upon the appliance. Everybody, and I mean everybody, had a card of introduction to one of the houses. They passed the cards out in every factory and office in town. It got so that only a sucker would pay list. But that's all over now. Where they have not been able to call the cards back, they now say that they don't have the particular item in stock. The houses that dealt only in electrical appliance have shut up shop because they can't get any more. Some of the really smart operators may have sizable stocks cached away. If things get as tight as they were in the last war, these boys will become the black market operators."

"But how were they able to get appliances in the first place," I asked.

"That old desire to 'make a fast buck' as someone said a few moments ago," he continued. "Suppose I'm a dealer with an average monthly sale of forty refrigerators. They cost me 'X' dollars each. Now if I bought sixty boxes a month, I would get the benefit of the carload price—say ten or fifteen dollars cheaper. On the forty I sold regularly that would be an extra $400 to $600 of real net. So why shouldn't I let somebody who would lay cash on the line have the extra twenty boxes for what they cost me? So out the back door they went."

"That's interesting," one of the group said. "It all goes to prove that even a half-war is hell."

Quiet Transformers MAKE GOOD NEIGHBORS!

Preparing for audible sound level test on a 1000 kva power transformer at Allis-Chalmers Pittsburgh Works sound laboratory.

Each distribution transformer design gets sound and harmonic analysis and is tested in accordance with ASA and NEMA standards.

In New Sound Laboratory Allis-Chalmers Engineers Track Down Causes of Transformer Noise.

IT'S SO QUIET in this sound laboratory you can almost hear a pin drop. The two foot walls of concrete, glass wool and acoustical tile absorb 99.98% of exterior noise power . . . keep ambient noise level down to 27 decibels.

Here, Allis-Chalmers engineers investigate audio noise, make sound level tests . . . gather data used in designing low sound level transformers. Even the most minute detail is considered. They check into core construction, clamping, ways of anchoring core and coils, location and number of accessories.

In their efforts to develop better, quieter distribution transformers, A-C engineers are working on complex problems of sound level, surge protection and construction . . . putting improved performance into every size and type. Research, engineering and production team up to give you the best in electrical design and construction.

These are a few reasons why Allis-Chalmers distribution transformers are welcome neighbors in quiet neighborhoods. For more information, contact your nearby A-C sales office, or write for specific bulletins.

Bulletin 61B7309A — ACP (Allis-Chalmers self-protected) distribution transformers to 100 kva.

Bulletin 01B6186B — General description of complete A-C power and distribution transformer line.

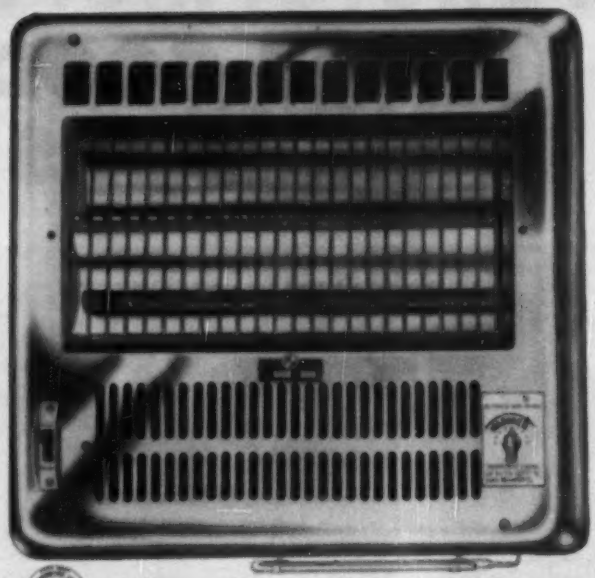
Bulletin 61B5726A — Rural transformers, including economical "RU" line, and ACP premium protected.

ALLIS-CHALMERS, 939A SO. 70 ST.
MILWAUKEE, WIS.

A-3122

ALLIS-CHALMERS

NOW to meet the demand of YOUR CUSTOMERS



Tested and listed under re-examination service by Underwriters' Laboratories, Inc.

Two New Wall-Insert HIGH WATTAGE

RADIANT HEETAIRES...

1500 and 2000 Watts . . . Two Heating Zones or with Built-in Thermostats

Good looking, compact, easily installed, they are equipped with the patented NEO-GLO elements — for cheerful, comfortable *immediate radiant heat!*

207-208 HEETAIRES Have All These Features

- Abundant Infra-Red Radiant Heat
- Choice of 2 Heating Speeds of Thermostatic Controls
- Highly Polished Chromium-Plated Reflectors
- Simple, Easy Installation
- Safe, Clean, Controlled Instant Fumeless Heat
- Absolutely Quiet

Write for the complete details and specifications — and the name of your nearest HEETAIRE wholesaler . . .

MARKEL ◆ LA SALLE
ELECTRIC PRODUCTS, INC. PRODUCTS, INC.
145 SENECA ST. • BUFFALO 3, N. Y.

LETTERS TO THE EDITOR

To the Editor:

In your January 1950 issue you carried an excellent article entitled "Whose Water Is It?" I am sure that your readers would react favorably to the factual approach you made to the problem and to the comments you made on the seriousness of the problem.

Enclosed are two pamphlets which we have recently issued on the same problem. The one entitled "Whose Water" reviews the recent decision of Federal Judge Peirson M. Hall in the San Joaquin River water right case. The Supreme Court pamphlet reviews their recent decision in what is known as the Gerlach case. The important point is that in two cases the representatives of the federal government contended that there were no private water rights on streams presumed to be navigable and in both instances their contentions have been ruled against in the courts. It can be anticipated that in their efforts to gain control of our waters they will come up again at the first opportunity.

My thought in writing to you is this—while we are distributing these pamphlets to a substantial group of officials of various types and to other leaders in California and in Washington, we would be glad to supply copies to any of your readers gratis. A card addressed to the Water Economics Committee, Irrigation Districts Association of California, 932 Pacific Bldg., San Francisco 3, will bring either one of them or both.

Sincerely,
Bert L. Smith, Secretary
Water Economics Committee

EDITOR'S NOTE: Both of the pamphlets mentioned by Mr. Smith contain vital and pertinent information on a subject of major moment to every Western state—the preservation of water rights.

To the Editor:

We have read, with more than ordinary interest, your editorial on page 80 of the July 1950 ELECTRICAL WEST, lauding Mr. Mullendore's protest against inquisition.

After listening for years to protests and criticisms, I am convinced that the only salvation of our Republic depends on definite, constructive efforts to eliminate the underlying causes of our fantastic "political economy"—and soon! In my opinion, the Sixteenth Amendment is most culpable. Since last October, I have been striving to make the Repeal of the Sixteenth Amendment a live issue in the 1950 and 1952 national campaigns.

Recently, I summarized my views, perhaps too concisely, in a letter to the editor, which appeared under the heading, "Which Way, America?" on page 665 of the AIEE July 1950 *Electrical Engineering*. I do not ask you to cite or quote my views. But I hope you will read the item, and possibly see fit to amplify the ideas, for the purpose of making them more attractive as well as intelligible, to both voters and statesmen.

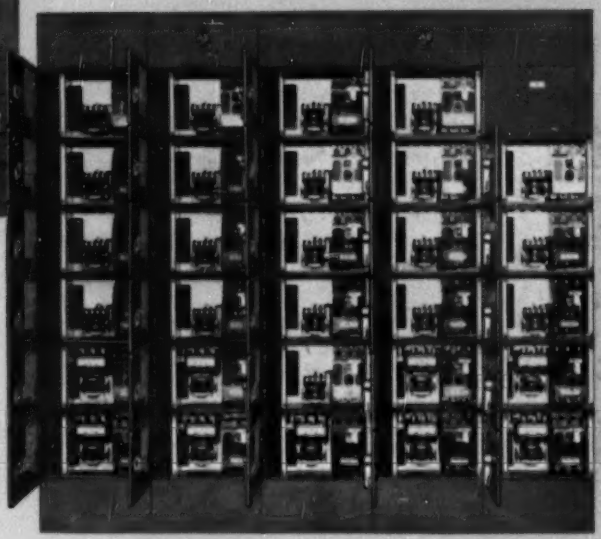
Sincerely yours,
L. N. Robinson
2302 33rd Ave. S.
Seattle 44, Wash.

HOW to Centralize

Your Motor Controls with Sectionalized Multi-Unit Panels

Bulletin 798 Multi-Unit Control Centers can be assembled in one or more vertical sections containing starter panel units with disconnect switch or circuit breaker connected to a common power bus. The result is a completely enclosed, dead front, floor mounted switchboard, ready for connection to your motors in the plant.

There are two basic types: Fixed connection type and Plug-in type. And there are three types of terminal connections: Type A—direct to starter units; Type B—to terminal blocks in each starter unit; and Type C—to master terminal blocks at top or bottom of each section. These details are described in Bulletin 798. Please write for copy.



Individual vertical sections consist of flanged side plates rigidly joined by cross member. A 4-inch wireway runs vertically through each section and connects with bus bars at top of section.

Advantages

Centralized operation
•
Greater safety
•
Lower maintenance cost
•
Improved appearance
•
Adaptable to changes
•
Ideal for remote control of motors which normally would require starters with special types of enclosures.

Equipment Available

Combination Starters

Across the line—fusible—with disconnect switch.
Across the line—with circuit breaker.
Reversing—fusible—with disconnect switch.
Reversing—with circuit breaker.
Multispeed—fusible—with disconnect switch.
Multispeed—with circuit breaker.

Other Control Units

Reduced voltage—autotransformer starter—with circuit breaker.

Main incoming line circuit breaker or disconnect circuit breakers or fusible disconnect switches for feeder circuits, lighting panels, and transformers.

Accessories, such as push buttons, selector switches, pilot lights, auxiliary contacts, control relays, control transformers, and special assemblies.

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.

550m

A-B Quality

ALLEN-BRADLEY

QUALITY

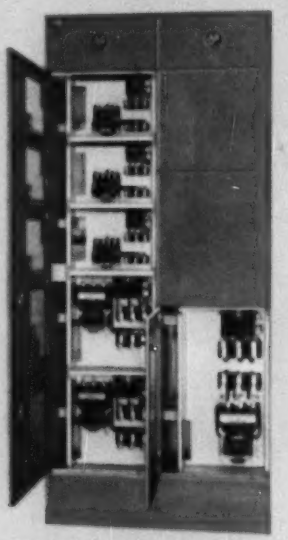
ALLEN-BRADLEY MULTI-UNIT CONTROLS

are quickly adaptable to plant changes

- **Fit any floor arrangement**
- **No special supports required**

Bulletin 798 Plug-In Control Centers are provided with connection clips, attached to the back of each control unit, which slide over the vertical bus bars that rise behind the individual unit sections. Contact is maintained with spring clips. Any sectional unit can therefore be withdrawn or shifted to another position. A new type of unit can be slipped into its place. Thus, the Allen-Bradley Multi-Unit Control is always ready for any plant change.

The various vertical sections can be arranged to fit any room or floor plan.

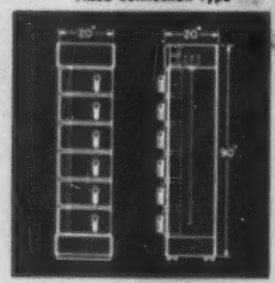


Two section Control Center with Sizes 1, 2, & 3 Switches and Disconnect Units.

Changing a Multi-Unit section is a simple job when the Allen-Bradley plug-in construction is used. Changes are easily made to fit new plant requirements.

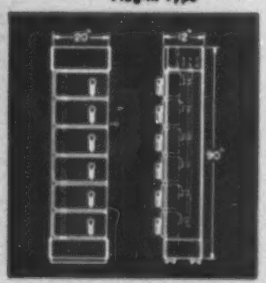
MULTI-UNIT PANEL DIMENSIONS

Fixed Connection Type



Vertical sections are 20 inches wide, 20 inches deep, and 90 inches high. White interiors make inspection easy.

Plug-In Type



Vertical sections are 20 inches wide, 12 inches deep, and 90 inches high. A-B Multi-Unit Cabinets have white interiors.

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.

A-B Quality

ALLEN-BRADLEY

SOLENOID MOTOR CONTROL

QUALITY

5304

SEPTEMBER 1950 Vol. 105, No. 3

ELECTRICAL WEST

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED SECTION OF THE U. S.

SPECIFICATIONS FOR A FEDERAL POWER POLICY

Thomas W. Delzell*

Chairman of the Board, Portland General Electric Co.

THE self-reliance, enterprise, initiative, imagination, independence and individuality of the American people constitute this nation's greatest resource. Beside it all other resources of the country pale. It is the one resource which beyond all others should be conserved and preserved. A first principle, therefore, in any national plan or policy for governing the development and use of water resources as well as other natural resources ought to be one that would give highest priority to the maintenance of the self-reliant and stalwart character of our people.

Perhaps the most basic tenet in our philosophy of democratic and representative government is the belief in equality and the abhorrence of discrimination and privilege. Based upon this tenet, a second principle that ought to be followed in the preparation of resource development policies is one that would guarantee all segments of an affected population equal consideration for their legitimate interests and an equitable share in the benefits of development.

Another vital ingredient of our democratic philosophy is the fear of unchecked governmental power, and of the coercion which it can exercise upon the people. This fear of coercion can not be dissipated merely because the objective of the coercion may be a noble purpose such as the conservation and development of our water resources. A third principle arises from this fear, and it would caution against the grant of any extraordinary federal power to do things in water resource development that can be efficiently and adequately accomplished by states, municipalities, private concerns and individuals. The principle also would require a maximum of local autonomy, and that the powers now possessed by the federal government in this field, and those that later may be granted to it, be subjected to the check of democratic processes and controls, and the counterbalancing power of independent arms of government.

The recommendations which follow are based upon these three principles.

Review Projects Before Approved

What basis should be established for the decisions to authorize water resources projects of various kinds? Such projects should be authorized by Congress and appropriations made subject to the following conditions precedent: (1) thorough investigation of the merits and demerits by the sponsoring federal agency; (2) full and complete hearings and a report thereon to Congress by some type of board of impartial review and analysis, and the Federal Power Commission, or both, as to the need, costs and feasibility of such projects, the part or parts which local public or private enterprise can and should undertake, and the part or parts which should be undertaken by the states through agencies, of an interstate character, using in each case non-federal capital for financing; (3) with the understanding that approval of the Congress of a plan of basin development will not preclude subsequent construction of parts of the over-all project by local, public or private agencies, as they become able to assume the responsibility for the construction of such parts; (4) the federal government should undertake such projects preferably at times when the expenditure of such federal funds will aid the nation's economy, overcome the effects of potential depression and not contribute to an inflationary spiral.

How can we assure adequate consideration of all purposes which water resources can serve, including recreation and fish and wild life? By requiring in the manner heretofore outlined adequate hearings, findings, opinions and orders by a board of impartial review and analysis, or its equivalent and the Federal Power Commission, or both, prior to the authorization of water resource projects. Necessarily, the hearings should be broad enough in scope to receive the careful attention of and secure evidence from all manner of affected interests.

Legitimate Federal Responsibilities

What should be the nature and extent of federal water resource development? The federal government possesses long-established legitimate powers to develop our country's streams for purposes of navigation, flood control, reclamation, the national defense, and "incidental" production of electric power. It would be difficult to find individuals in the Pacific Northwest who

*Extracted from testimony before the Water Resources Policy Commission at one of the recent series of hearings held throughout the West.

would debate as a general proposition the propriety of these powers. Certainly it would be difficult to find any such who are identified with Portland General Electric Co.

If this witness were required to select the one thing he deemed most important to impress upon the commission, it would be his desire, once and for all, to bury the dead cat of alleged opposition within the power industry of the Pacific Northwest against the propriety of appropriate federal government participation in the development of the nation's water resources. It is unfortunate that allegations of this kind have been clothed in the anonymity of such phrases as the "power trust" and the "special interests." We should like to state most emphatically that the past record of Portland General Electric Co. certainly, and we think of most other Pacific Northwest companies who like ourselves have been pioneers in our field and who are acquainted with the special problems and needs of the West, justifies specific exemption from misleading generalizations of the kind mentioned.

Favor Multipurpose Projects

We are wholeheartedly in favor of multipurpose projects such as Bonneville Dam and Grand Coulee Dam, of the McNary project, and of other similar projects. We have given our endorsement to the principle that where these projects have power-producing facilities, they should be interconnected with trunk transmission lines and these lines should be extended over economical transmission distances to the load centers of this region. We have contributed hard cash and the time and influence of our officers in repeated, and we think successful, attempts to obtain in Congress the authorizations and appropriations for federal works of this kind which the great majority of us here in the Pacific Northwest believe will bring benefits to our region and to the nation.

Further, we are of the opinion that projects involving purposes beyond the scope of private initiative such as flood control, improvement of navigation and reclamation projects which frequently are interstate in character and require financing on easy terms over long periods of time, and projects which come within the constitutional authority and responsibility of the federal government require its continued participation in water resource development of such a region as the Pacific Northwest.

Very emphatically, however, we think that works of this nature carried out by the federal government should not preclude participation in water resource development by states, by municipalities and by private companies or individuals in conformance with such over-all and coordinated plans for the river basin as may be developed by competent statutory bodies. And by "participation" we mean to include active initiation, planning, financing, building and administration of projects by non-federal groups to the full extent of their willingness and capability. Furthermore, it is our view that participation of this kind should be encouraged by the federal government's policies and by its administrators, rather than discouraged. There seems to be a growing tendency to adopt as a concept, that because the federal government now does part of the job, it should do it all. We do not agree with that concept; we in fact believe it to be an exceedingly dangerous one to our way of life. The recent history of our times demonstrates the dangers to free people and free institutions implicit in government monopoly.

A self-reliant, stalwart people—the requirement of our first principle—cannot be maintained under a system in which everything is initiated, engineered, financed, built and administered for them.

Nor can equality of different ideas and of different methods, and of the different interests and desires of local people be preserved under a system that does not afford the maximum of local freedom to express and execute them, which is the requirement of our second principle.

Partnership Based on Equality

Again, the third principle we have set down would require that freedom of action be maintained for local people below the level of federal participation, through effectively democratic means for making their voice and influence heard in a positive and controlling way. If the danger of unchecked federal domination and power is to be avoided, the extension of mere counseling and advisory privileges to local people will not suffice. Rather, in the ultimate proposals for sound policies governing over-all, regional water resources development, there is need for making the states, their subdivisions and their citizens equal with the federal government and its agencies, all of them partners in the gigantic task of making our water resources work for us. And inasmuch as the administration of such a gigantic task is complex, involving the interpretation of many laws and the formulation of many regulations based upon them, wisdom demands that as a final protection to local interests there be in the ultimate structure of governmental water resource policy a place where those who feel aggrieved can conveniently seek redress.

Specific Recommendations

Our specific recommendations to achieve some of these ends, largely in respect to electric power, follow:

1. The federal government should participate in electric power production only in connection with works for improvement of navigation, control of floods and reclamation of arid lands. Such participation should come under the provisions of the Federal Water Power Act in the same manner and to the same extent as such act now controls installations by municipal bodies and private persons. All projects not involving navigation, reclamation and flood control purposes should be left for development by states, municipalities and private individuals or companies, and they also should have the prior opportunity to develop all or such parts of the multiple-purpose projects as they can.

2. A clearly established limitation should be placed upon the federal government's responsibility for marketing the power it produces at multipurpose projects. This responsibility should include the construction and acquirement of only such transmission lines and related facilities as are necessary to interconnect projects in accordance with sound engineering and business principles and to achieve delivery of power in wholesale quantities to distributing systems and to large industries. The sales to industry should be confined to those able to take service in large quantities direct from the federal system and unable to secure adequate service from the public and municipal utilities. The government should not seek to extend itself beyond this point, into the field of distribution to the general public, nor should it seek in any way to influence or dominate the ideological pattern of distribution to the general public by the practice of subsidization, discrimination, proselyting, or any form of coercion.

3. The danger of monopoly is not lessened by making it the agency of government. Because power marketing agencies of the federal government have became important suppliers of a public utility service, and because the essence of a public utility service is that it be made available to all who require it upon reasonable and nondiscriminatory terms, it is not fitting that these agencies themselves should be permitted to determine what is reasonable and what is nondiscriminatory. Such agencies should have no powers to regulate others as in some respects is now the case. Rather they

Hydro Power Recommendations of Engineers Joint Council

Constructive suggestions for a sound federal power policy came also from the Engineers Joint Council, whose Water Policy Panel submitted a critical report to the Water Resources Policy Commission. Here are its hydro power recommendations:

Capital costs of federal power should not be subsidized. No power should be sold at less than true cost.

Costs should include all taxes that would be payable on the lands, improvements and business if privately owned. Local enterprise should have priority on hydroelectric power development except where specifically reserved by Congress.

Federally generated power should be sold at the power plant. Aside from federal energy requirements there should be federal transmission only to obtain a higher price for the power, and then only after a thorough cost allocation on the transmission facilities.

Federal power authorizations should be predicated upon the cash they turn in to the Treasury. States and local agencies should be allowed to acquire federal power facilities.

National defense or "strengthening of the national economy" per se should not be adequate justification for federal power development.

Federal power should not be used as a yardstick to determine private power rates and costs.

should themselves be regulated by an independent and impartial arm of the government, whose findings and orders are subject to judicial review. Such an independent regulatory arm could and probably ought to be the Federal Power Commission.

4. The powers of the regulatory arm should include the licensing of both federal and non-federal generating installations upon streams, over which the federal government has jurisdiction; the determination of the public convenience and necessity of transmission lines and other facilities proposed to be built or acquired by federal power marketing agencies or by others where federal interests are involved; supervision of accounts in accordance with law and standard regulatory practices; approval of rates and tariffs; and enforcement of reasonable and nondiscriminatory standards of service.

5. Subsidization, in whatever form, creates an area of economic vacuum from which unsubsidized enterprises are expelled and into which the subsidized enterprises rush. If the foreclosure of individual enterprise is to occur in our business, it will be by this route more than any other. Therefore, rates for the sale of power from federal projects should be at least sufficient to cover (1) the full cost of maintenance and operation of power production and transmission facilities; (2) interest upon the capital investment allocated to power at least equal to the cost of capital borrowed by the federal treasury; (3) amortization of capital investment allocated to power over a reasonable period; (4) the cost of interim replacements of power facilities; (5) repayment over a reasonable period of any capital costs not allocable to power, but which must be repaid from power revenues in order to make projects self-liquidating; (6) taxation or payments in lieu thereof equal in amount to those which would be assessed were the facility in non-government hands.

6. It is proper that there exist guarantees in federal statutes governing the marketing of federally produced electric power, which prevent its monopolization. The preferences granted public bodies and cooperatives in present federal laws are partly based upon such a premise. However, there are hundreds of thousands of people in the states of the Pacific Northwest, and elsewhere, who do not receive electric service through the medium of public bodies or cooperatives, but instead through government regulated utility companies. These people have a right to expect protection from monopolization of benefits from federal projects. The experience of the last few years has demonstrated the need for additional guarantees in federal law which will assure equitable allocation of power benefits as between the people of states and areas affected by federal projects, and which will carry out more fully the original intent of Congress that consistent with sound business principles the widest possible distribution of federally generated power, particularly for the benefit of the domestic and rural consumers, be achieved.

States' Rights

Present preference and priority provisions should be reviewed and amended to provide a proper guarantee against any abridgement of rights to the use and benefits of water resources, including the energy that can be produced therefrom, presently vested in the states. This guarantee should provide, in the interests of equity, that all power generated at federal projects within a river basin should be fairly and equitably distributed or allocated among the several states within such river basin, by a properly constituted independent federal commission or agency (the Federal Power Commission is suggested) after giving effect to all relevant factors and subject, from time to time, to revision and judicial review.

The amended preference and priority provisions also should grant a priority right to regulated public utilities which distribute federally generated power without profit upon the federal investment, ahead of large industrial users.

Specific language also should be incorporated into the statutes which clearly prohibits any interpretations allowing administrators of federal projects of marketing agencies to:

1. Deprive the general public of any state or area within economic transmission distance of a federal power project of its fair and equitable share of the benefits of such project.

2. Prevent agreement upon long-term firm power contracts with state-regulated public utilities upon essentially the same basis, and containing essentially the same provisions applicable to contracts with other purchasers for resale to the general public.

3. Withhold contracts from state-regulated public utilities serving the general public, on grounds that regulation by duly constituted state or local authorities is insufficient to determine that rates for resale are reasonable and non-discriminatory.

4. Require the inclusion in contracts with state-regulated public utilities any provisions, as a condition to agreement, which impose onerous and unreasonable sellout requirements, or options for purchase, either by federal or non-federal agencies.

What the country needs is a water resource policy that recognizes fully state and local rights, the virtues of local controls and responsibilities, fair and equitable distribution of the benefits, private enterprise and initiative, and the values that can be obtained through the combined and cooperative efforts of federal, local public and private capital working as equal partners.

IES Leaders Shed Light

on Illumination research, techniques, sources and equipment which provides new tools with which to light homes, schools, offices, industry, stores, airports and aircraft, also streets and highways

Goddard Sturrock

TWO sensational new developments, a number of less spectacular but vitally needed reports on research, a wealth of new detail regarding lighting treatment in all fields, some excellent selling ideas and many fully developed new lighting tools for contractor, designing engineer and consumer came out of the annual technical conference of the Illuminating Engineering Society at Hotel Huntington, Pasadena, Aug. 21-24. Only once before had IES come West, in 1939 at San Francisco, and as on that occasion its members brought their families.

Leaders in illumination presented important papers and discussions and in turn saw samples of lighting in action, both at the Lighting Service Forum, Monday evening, and on tours of installations in the Los Angeles area. Registration numbered 559, of which 320 were members. Even the entertainment program was illuminating—an outdoor fiesta in a lighted garden, a banquet in similar surroundings, an inside tour of a major moving picture studio and the customary "progress report," Wednesday night, done in showman style by Alston Rodgers, G-E Lamp Department. (New things in lighting equipment shown therein are reported in the Contractors News Letter, p. 70.)

The two sensational items, both the outgrowth of new and far reaching developments in glass, also described, were a sealed beam lamp of high enough wattage to be used as an electric range element; and a fundamentally new method of producing light electrically—from an electric-glass-phosphor sandwich or condenser. The condenser plate glows directly from charge and discharge cycles, without need for transformation into heat or ultraviolet first as in incandescent and fluorescent lamps.

Since IES publishes the papers both in abstract and later in complete form in *Illuminating Engineering* only a brief "index" of the subjects and their significant points will be summarized here. These are grouped by general classifications and do not follow their order in the program.

President Charles H. Goddard, of Sylvania Electric Products Co., Salem, Mass., directed his forthright presidential address to some recommendations: that dates of regional conferences be coordinated and set two years in advance to prevent conflict of dates; that regional vice-presidents meet once or twice a year; that new chapters be given help in programs; that chapters and sections elect two board members for a two year period to provide continuity of policy; that less detail be loaded on the IES Council so that it can devote its meetings more to policies and planning; that all members be alert to the changing times and be ready for adjustments to war or peace; that the fiscal year dates be changed to July instead of October, and that the annual conference be that of the incoming president instead of outgoing.

(The committee on the president's report later agreed with him on regional conference dates but not on a two-year-ahead basis; on speaker aid for chapters, perhaps a speakers' bureau; on board members tenure, even recommending that three past chairmen be kept on the board; that the financial reserve be increased to a 12-month base and that routine be reduced on council agenda. Fiscal year, it reported, is now being studied by a committee.)

Incoming President Walter Sturrock, General Electric Co., Cleveland, outlined his thoughts as to IES objectives for its 7,000 members: 1. Create a better understanding of the value of the IES program and retain members and their interest; 2. Make the journal, *Illuminating Engineering*, more timely with lighting news and not print all papers in full; 3. Because expenses have doubled, increase the margin of safety on the budget by raising the reserve beyond the present 25% or 3 month operation; 4. Have a coordinating committee to work with government agencies on defense problems; 5. Extend cooperation with colleges and aid in establishing more lighting courses.

William F. Little, Electrical Testing Laboratories, New York, was presented the highest honor in the lighting field, the IES Medal for 1950. G. W. Beals, Miller Co., recited the purpose of the medal—to recognize meritorious achievement. Little was cited for nearly a half century of development in lighting measurements, development of the certification programs and creation of the IES lamp. Certificates raising them to the grade of Fellows were given by President Goddard to Eugene Commery, and James M. Ketch of G-E, Nela Park, and to Willard Allphin and Dr. Edwin F. Lowry of Sylvania. Ward Harrison, of G-E (not present), was made an honorary member, and Frank Hanson, Western Institute of Light & Vision, Los Angeles, was made a member emeritus.

President-elect Sturrock on Wednesday conducted a "flash report" session at which representatives from about 30 of the 40 or more IES technical committees spoke briefly as to the purpose and progress of their work. At this session Carl Martin, Benjamin, San Francisco, told of the problems met in producing last year the Recommended Standards for the Canning Industry in cooperation with the National Canners Assn.

C. L. Crouch, technical director of IES, reported on improved measuring tools under development now, particularly a new visibility meter on which Dr. C. L. Cottrell of Cornell later spoke in detail (an IES research project). He also mentioned research by John Kraehenbuehl of Illinois on pavement surface reflectances; a clever towed trailer on which a light cell is mounted for fast recording on a tape roll of illumination levels along a street; development of uniform stand-

Prideaux Meissner

Emblem in glass

Dahlin Smedley

ards for taking measurements, and an "alertness indicator" described by Allphin earlier.

No small engineering job itself was the designing and handling of the entire conference, both by the national technical conference committee headed by R. F. Hartenstein of Ohio Edison Co., and the local executive committee, headed by Don W. Prideaux, Lamp Department, G-E Co., Los Angeles, and the many committees handling details (space forbids credit to all deserving it until later). Regional vice-president Ted H. Shepherd, and Southern California Section President Oscar Meissner, both Los Angeles Department of Water & Power, carried heavy responsibilities for the success of the conference.

"Planned Lighting In Action" was the title given the subaidiary Lighting Service Forum, presented Monday evening under J. S. Walsh, PG and E. Co., San Francisco. Using a mock-up to appear as a huge television set, five utility companies put on a dramatized version of how lighting is promoted in their areas. Among them Central Arizona Light & Power Co. told how it promoted residential lighting (A. W. Smith, sales promotion manager); Los Angeles Department of Water & Power told of street lighting (T. W. Lauer and R. T. Nadeau, street lighting engineers) and Southern California Edison Co. of setting an example by its own offices (Roy E. Dahlin, director of lighting). (Stories on these may appear later.) Others in the show were Pennsylvania Power & Light and Philadelphia Electric Co.

In the following are even briefer-than-the-abstracts appraisals of significant ideas or information in the 35 or so papers and presentations.

Samuel B. Morris, manager of Los Angeles Department of Water & Power, while welcoming the convention, in one thought-provoking sentence gave the third dimension to the whole progress of lighting. He recalled that the entire advance of electric lighting from its inception has been made within one lifetime.

Light Sources and Glass

Sprung as the last item on the entire program was Sylvania's latest achievement, a completely new way of producing light electrically, and more directly than with heated-to-incandescent filament or fluorescent-chemicals-translating - invisible - ultra - violet - from-an-arc-to-visible light. Dr. Lowry presented the work of Elmer C. Payne, Eric L. Mager and Charles Jerome of Sylvania. The device is a luminous capacitor, using electric conducting glass as one plate, a layer of phosphor dispersed in a dielectric and a second conducting plate or backing. This makes up the luminous panel which glows when energized. (A descriptive article on this will appear soon.) The idea has possibilities of being used like acoustical tile on a ceiling and filling the room with a low brightness.

Preceding this Dr. W. W. Shaver of Corning Glass Works had demonstrated several new glasses, among them a glass made conductive to any desired resistance yet remaining transparent, useful in making radiant heating panels. This is the glass used in the luminescent panel. Other new high-silica glasses Shaver said are highly heat resistive, shock and softening resistant and can be used for high wattage incandescent lamps in smaller envelopes. Others are high in ultraviolet transmission. Then he showed many of the potentialities of a photosensitive glass. Into them a picture or a pattern, such as small louvers, can be photographed with ultraviolet exposure. High temperature development casts a permanent picture or louver into them. These can be used in decorative effects or as light control media.

Immediately following, Richard G. Slauer, Sylvania, described new lamps made with the high heat resisting Vycor glass in which wattages as high as 1,250 could be placed, the sealed beam lamp being used as an electric range element. A Vycor glass, deep red filter over the lamp would cut down the brightness but retain the heat transmission. Other uses would be for infrared applications, or with Vycor envelopes, high wattage outdoor floods and spot could be made with small envelopes.

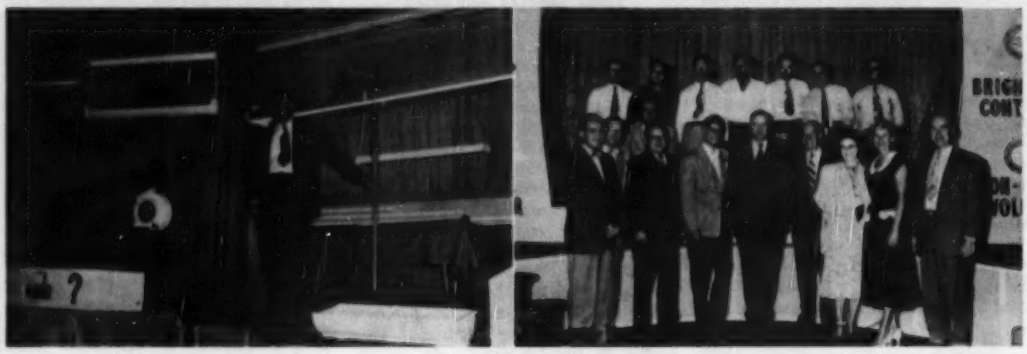
Necessity for extreme care in contour design and reflective coating in making pressed glass lamps was stressed by P. F. Dietz of Westinghouse Electric Corp. W. E. Anderson of the same company reported results of tests on common lamp sockets in which new higher wattage incandescent lamps in smaller envelopes had been tried. Higher temperatures had not made them hazardous to use in such sockets. L. E. Barnes of Westinghouse told of a new photochemical lamp for use in photostating and white printing.

Residence Lighting

Brought back to earth from the dreamlike world of garden lighting as shown in color pictures by Pasadena's artist of outdoor lighting, F. B. Nightingale, Kim Mfg. Co., the residence lighting session started with the sewing machine and plunged into fluorescent. Myrtle Fahsbender, Westinghouse Lamp Division, followed her previous studies of lighting for home sewing with a study of the special needs at the business end of a sewing machine. So-called sewing machine lamps proved entirely inadequate so her solutions all involve supplementary illumination from floor, table or pin-to-wall lamps near the task.

N. H. Vacha, John C. Virden Co., brought in a potent suggestion to counteract the emotional or mood-lighting-only phobia of women. He advocated the advising of making one room of a home a "seeing room," in which to do sewing, reading, craftwork, etc. He had previously reviewed the history of lighting fixtures and

Central Arizona's residence lighting promotion enacted at the Lighting Service Forum. At right, the Los Angeles street show



Alston Rodgers in the commercials at the Progress Report. Lighting Forum cast, directors and the hard-working stage crew

their relation to architectural styles.

Fluorescent lighting has moved a long way toward the home in the past year, E. W. Commery, G-E Lamp Co., told the conference and presented two important and useful studies. Since fluorescent invades the home a better understanding of its color effects on paints and fabrics and a well engineered means of using the long lines of light are needed. With introduction of new white lamps with red phosphors, the deluxe lamps, and a hope to standardize on these and standard lamps, the study lists and tries to define how the most used colors of paint and fabric will look under each of these lamps.

The second study may well be the most useful contribution to home lighting since the IES lamp. Averaging the sizes and dimensions of people and the chairs they sit in, tables and lamps they use for some 20 home seeing functions, simple recipes have been developed by which to get good average results with ordinary equipment. Definite measurements as to height of lamp and its location in relation to the seeing task are included. It is the practical and simple approach to a home lighting solution. Commery with the first paper showed bold uses of long fluorescent lamps in lighting whole wall areas of a home.

Aviation Lighting

Hardly enough time was afforded the enthusiasts who joined the conference from the aviation industry for the aviation lighting session Tuesday morning. Joseph S. Marriott, regional administrator, CAA, opened by reviewing the evolution of lighting for safe flying. Then W. C. Bryant, Lockheed Aircraft Corp., described lighting equipment used to light the passenger quarters of commercial aircraft, its signal, landing and taxi lights, and then the problem of lighting the complex instrument panel of commercial and military craft.

A dramatic touch was introduced when H. J. Cory Pearson, chief, lighting branch, airport division, CAA, showed movies of the approach light testing and radio and radar systems of assisting craft to land as tried out at the nation's foggiest airfield, Arcata, Calif. How all systems were necessary and that none alone could do the job was Pearson's conclusion. "When they no longer put windows in the cockpit then I'll agree that electronics can do the whole job," he said.

W. A. Pennow, Westinghouse, himself a pilot, analyzed the special features of three general types of high intensity runway lights. He said present lighting equipment is inadequate for future uses and showed a need for an intermediate intensity system for non-instrument runways. Taxiway lighting he felt was particularly poor and gave the pilot almost no guidance at all. He then showed several types of equipment. His comments provoked lively discussion which had to end prematurely for lack of time.

Light and Agriculture

Influence of successive rhythmic occurrences of light and dark periods, the relative length of such periods and

William Little receives highest honor, IES Medal for 1950 Hinkley Shepherd Goddard Sturrock

Oregon—Fitch Runyard Webster Washington—Hollingsworth Davis Toly Huber

the effect of different kinds of radiation on plant and animal life are beginning to be better understood by scientists, stated Joe P. Ditchman, General Electric Co., Nela Park. Many theories have been exploded and there are still so many things we do not know about different kinds of light that we must proceed carefully when asked to advise on farm lighting, he said. Certain things we do know. By controlling day lengths, onions may be grown from seed to seed without the formation of bulbs. Sex of hemp plants, amount and quality of fiber produced, may be controlled in large measure by means of dark-period interruptions. Propagation of rotted cuttings entirely under fluorescent lamps is now practical in windowless structures. Winter-prime pelts of mink may be induced in the summer by reducing durations of light periods. Fertility of dairy cattle and other animals may be influenced by variations in daylight to which they are exposed. We must keep in mind the specific energy distributions relevant to plant and animal life when we have problems in these fields. Light for plants and animals must take into consideration their "point of view," said Ditchman.

Fluorescent Lighting

There were a number of papers dealing with various aspects of fluorescent lighting. A method of appraising modern fluorescent office lighting system was presented by Geo. J. Taylor, Day-Brite. He applied a letter rating system to 18 current types of luminaires on a 50 f-c basis and gave a complete cost analysis.

Specifications of color rendering properties of fluorescent lamps was discussed by Chas. W. Jerome, Sylvania and Deane B. Judd, Bureau of Standards. There is an urgent need for a measure of the color-rendering properties of fluorescent lamps, heightened by the introduction of the Deluxe line of colors. The first problem was to set up a standard illuminant under which the true colors of samples could be determined. Then the color rendering properties of a test lamp can be judged on the basis of comparison.

The trend toward use of krypton as fill-gas in some fluorescent lamps imposes a more difficult problem on fluorescent lamp starters. A simple method of measurement of glow-switch transients, their size and nature and effect on design features of starters was given by F. H. Rixton, Westinghouse. He showed a new design glow-switch with the advantages of proper electrode configuration and fill-gas characteristics for satisfactory closing time in both inductive and capacitative circuits, and sufficient pulse area for starting krypton-filled lamps such as the 25-watt T12.

In a paper on thermionic cathodes for fluorescent lamps by Erwin F. Lowry, Sylvania, these conclusions were drawn: 1. For optimum performance, lamps should be operated at the current for which the cathode is designed. 2. Auxiliary anodes are non-essential except in certain specialized cases. 3. Lamp-life and other characteristics are seriously affected by poor form-factor of the ballasting equipment. 4. A new cathode-coating formulation has more than doubled lamp-life and

materially reduced end discoloration.

A method of evaluating fluorescent luminaires was proposed by Kurt Franck, Holophane. Introduction of 8-ft. fluorescent lamps means that to have the inverse-square law apply the photometric test distance (five times the largest dimensions of the luminaire) should be 40 ft. Since such distances are difficult to obtain in practice, Franck proposed breaking down the long fluorescent luminaire into elements of shorter length. Assuming a choice of 2-ft. elements, the process is to consider an 8-ft. luminaire to consist of four 2-ft. sections to be tested and evaluated separately. The series of "point" source luminaires at 2-ft. spacings can then be tested and evaluated in the standard manner.

Factors and variables in fluorescent lighting which can upset the lighting man's calculations were termed "X" factors by S. B. Benson, Jr. and E. H. Church, Benjamin. They gave as some of these factors, variations in performance of individual lamps, ballasts and luminaires, ambient temperature, drafts, line voltage and lighting calculation data. They suggested standardization of performance of ballasts, photometric tests based on light output of lamp-ballast-luminaire combination, lamps that will deliver peak output higher on the temperature scale, and further study of temperature and line voltage on light output of the lamp-ballast luminaire combination.

Louverall ceilings in department stores was the subject of a paper by Robert R. Wylie, Sylvania. The louvered ceiling is a new concept in lighting flexibility, he said. Typical apparent savings are found in the air conditioning diffuser equipment, sprinkler treatment, maintenance costs plus intangible savings because of flexibility. Planning can reduce operating costs and unlike conventional systems louvered ceilings permit the merchant to accent merchandise and make constant changes within a store to keep abreast of competition.

Streets and Highways

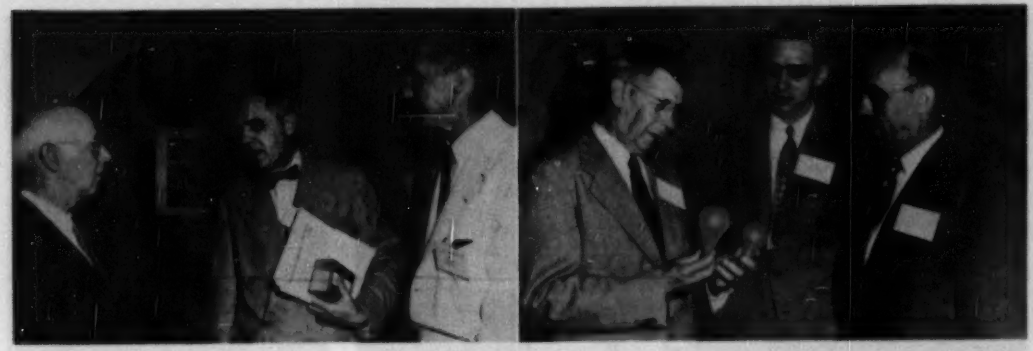
An a-c fluorescent lighting system for New York subway cars was described by E. W. Beggs and H. W. Graybrook, Westinghouse. The system uses a specially designed flywheel motor-generator that will operate over 15-second interruptions of d-c supply and with relatively constant a-c voltage and frequency of d-c voltages of from 450 to 750 volts on the motor.

Pictured from top to bottom—Past president Lee Taylor and Myrtle Fahsbender; Dr. Leland Brown, photo-sensitive glass and Dr. W. W. Shaver; sealed-beam range unit lamp shown by R. G. Slauer; Dr. Cottrell and B. S. Benson Jr. with threshold meter; Dr. E. F. Lowry, right, with new condenser plate light source, first time shown

Frank Hanson, right, made a member emeritus

Lighting of unusually hazardous or irregular roadway areas was a subject taken up by R. M. Swetland and J. S. Lindsay, General Electric. The manual on standard practice for street and highway lighting does not cover many of the unusual roadway conditions. The authors took up the problems of lighting for severe roadway curves and steep grades, low-mounted fluorescent lamp installations, severe foliage conditions, positioning of luminaires a considerable distance back from the pavement and the daytime lighting of tunnels and underpasses. Examples of a number of typical installations were shown.

The unusual features of the lighting system for the Brooklyn-Battery tunnel were described by Leo Geenens, Triborough Bridge and Tunnel Authority and Kirk Reid, General Electric. The system uses two 8-ft. cold-cathode tubes in series in a 16-ft. clear Pyrex tube. An ingenious wiring system using a high-voltage series grounded circuit with saturable core reactor ballasts feeds the lighting system from both ends of the tunnel. Illumination with hot-cathode lamps for a distance of 1,800 ft. inside portals in addition to the cold-cathode, provides satisfactory gradient when entering the tunnel. By means of electric eyes in the tunnel a central operator is enabled to change the current density for varying conditions of dirt and temperature. Because of the thick Pyrex tubes a brightness of only 6 foot-lamberts is experienced by the driver of a car, although when viewed at right angles to the tube the brightness is 600 foot-lamberts. All the requirements of a well lighted tunnel were met and this is said to be the best lighted tunnel anywhere.



Little Commery Vacha Andersen Dietz Dr. Zabel

It was suggested by A. E. Simmons, Div. of Highways, State of California, and D. M. Finch, University of California, that the design procedures used in highway lighting be reviewed because of changes that have occurred in light sources and fixture design within the last few years. It is believed that uniformity of illumination is of primary concern because it affects the pattern of pavement brightness as seen by motorists. It was suggested that roadway illumination be held substantially constant with a maximum ratio of illumination in the order of 4 to 1. It is further suggested that the minimum illumination on the roadway area should be used as a design criterion rather than the average value.

Some of the equipment failures resulting from high temperatures in street lighting luminaires have been because of questionable equipment and poor installation practices, said R. W. Loehr, Westinghouse. Particular emphasis was placed on failures of sockets and receptacles. Considerable progress has been made toward the solution of temperature problems but Loehr feels that much additional work will be required before questions regarding socket, receptacle and film cutout operation are settled in a satisfactory manner.

The lighting system for the Mystic River Bridge using 935 sealed beam 35-watt automobile type headlamps mounted in handrail posts was described in a paper by Walter J. McClain, J. E. Greiner Co.

Research — Churches — Schools

The effects of illumiation level on acuity, speed of vision, and productivity are well known, stated Willard Allphin, Sylvania, but there is need for a method of measuring the physiological cost of seeing; that is, whatever we use up within our bodies when we see. Several researchers have become interested in muscle-action potentials as a possible criterion, and IES research project No. 25, conducted at Tufts College, made a preliminary exploration of the tiny voltages generated in the frontalis muscles when reading. The Tufts study was not carried far enough to be conclusive, but it did hold promise for further profitable work. Allphin reported measurements made on three tasks in industry, using portable devices to measure muscle-action potentials.

A report of tests to determine the effect of task-to-surround brightness ratios of visual performance was made by R. L. Biesele, Jr., Southern Methodist University. The project is a pilot project only, to determine if significant results can be obtained. The results reported indicate that the task-to-surround brightness ratio may be fully as significant a factor in visual performance as the illumination level.

Lighting of the school auditorium and stage have not received the attention they merit, according to Carl J. Allen, General Electric. A great deal more can be done since classrooms have now generally been well lighted. In his paper on the subject he formulated the principal lighting requirements of the auditorium and stage and offered a range of suggestions to meet various sized budgets.

Functional lighting in Canadian church buildings was pictorially presented by H. C. Jones, Canadian General Electric. The IES standard of 10 f-c for church auditoriums has been adopted in most Canadian lighting or relighting jobs, and in many cases has been exceeded, he said.

Continuing with the study begun by Ward Harrison and reported on at two previous conferences, S. K. Guth, G-E Co., presented further data about the range between comfort and discomfort of brightness in the field of view for critical and casual seeing. The tests were made with fluorescent troffer type lines of light.

Dr. C. L. Cottrell, Cornell, described the theory back of a new contrast brightness threshold meter, its advantages and its relation to previous visibility measuring devices. His was one of the IES research projects.

That classrooms can be day lighted to satisfactory levels of controlled brightness was the conclusion of a study made by R. L. Biesele, Jr., Southern Methodist University, where the placement of rooms is relative to the sun, bilateral window used and control means are provided. His study was made largely among California schools. In presenting his report he charmed hearers with a beautiful collection of color photos made to illustrate sky and school conditions.

Next year the IES will hold its conference in Washington, D.C., Aug. 27 to Sept. 1.

B.C. Section IES Names Officers

British Columbia Section of the Illuminating Engineering Society has elected the following new officers to serve beginning Oct. 1 for a year: S. C. Smith, chairman, R. Merritt, secretary-treasurer; R. M. Campbell, C. A. Morrison, R. Racine, R. G. Scott and E. W. Thompson, managers. These officers have selected the following members to assist them during their term: E. E. Ackland, chairman membership committee; K. H. Bancroft, chairman attendance committee; R. Bemister, chairman publicity committee; D. Gordon, chairman study group committee; W. J. Lind, chairman meetings and papers committee.

B. C. Section's Oct. 19 meeting will be held in the Steffens-Colmer Studios Ltd., Vancouver, with D. Coltman, manager of Steffens-Colmer Studios, giving a demonstration and talk on photography and lighting.

Light comes into the living room from the window area as it does in daytime, thanks to valance-concealed slimlines mounted there. Extra light for reading comes from concealed flush-mounted spots around the perimeter. In the bedroom a down cove, covered with diffusing glass, sends light from slimline lamps down the wall at the head of the bed. A similar idea is used to light a desk area

SUNRISE HOUSE FIGHTS A FAD

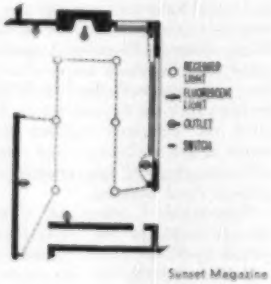
Northern California Electrical Bureau sponsors a model home lighting installation

Home lighting has suffered a depressing setback since the 1930's. All of the ground gained by intensive Better Light-Better Sight and IES lamp campaigns, kitchen lighting drives and educational effort seems to have been lost to a new crop of interior decorators who like the looks of bullet-shaped spots and who go in for dark walls and ceilings. Little has been done to counteract this fad. There are no home lighting campaigns, except in Denver and Phoenix. The CLM lamp makers who used to make IES lamps cannot seem to go it alone without help from the utilities.

After seeing "Horizon House," at Nela Park, Cleveland, where intelligent home lighting techniques overcome the decorator fad for darkness, L. H. Bennett, manager, Northern California Electrical Bureau, decided that a strong effort should be made to refocus public attention on home lighting.

Even such an obviously needed activity took a lot of doing. Consulting with the bureau's lighting committee it was decided that a "Horizon House" should be shown to the public of northern California. In other words, some wide-awake builder might be persuaded to build such a house with the aid of the electrical industry and the cooperation of furniture and interior design people. Bennett interested Walter Doty, editor of *Sunset* Magazine, in the project too.

San Jose division of Pacific Gas and Electric Co., through its sales manager, Doug Aiken, reported unequaled home building activity in its area and found a subdivider and builder who was awake to the new sales features which a certified adequately lighted and wired home would give him. According to Aiken, "We had a good growing residential territory and a large group of subdivision building contractors from whom to choose for our experiment in good lighting promotion.



Wiring diagram of the living room shows location of valance lights, downlights, convenience outlets and switching arrangement

"From our experience with the various subdividers, we chose Theodore Kirkpatrick, who was receptive to new ideas, whose type of building was not regimented or ordinary, and, on the other hand, was not overly modernistic or startling. Good financing and a good locality were also taken into consideration, as was the intended selling price of the completed homes. After all, we did not want to stress the best in lighting in a home whose price was beyond the reach of most people, nor did we desire to start our program in homes bearing the very cheapest price tag.

"So we came upon Blossom Hill Manor on the San Jose-Los Gatos Road, at the intersection of the Los Gatos-Almaden Road, approximately one mile north of Los Gatos, in the heart of California's Santa Clara Valley. The homes in this subdivision were planned to contain from 1,286 to 1,360 sq. ft., and priced to sell from $12,500 to $13,500.

"Plans at the time of our first contact were still in the blueprint stage, no ground having been broken. Salesmanship was required. It was, obviously, first necessary to sell the builder on the selling features of adequate wiring and lighting, patterned in great part after the most modern features incoroporated in the General Electric Co.'s "Horizon House" in Cleveland.

"Once the builder had been sold, and thoroughly so, it was necessary to get the electrical contractor, Pfieffer Electric Co. of San Jose, to submit a bid for additional costs involved, additional outlets, copper, and switches needed to qualify all 79 homes in the subdivision for Adequate Wiring certificates. We approached this first by getting a bid on the added wiring costs only for the single model home, and, when this proved to be unreasonably high, we pointed out to him that there was the possibility of getting this additional wiring, and possibly lighting and fixtures in the balance of the 78 homes; then his prices came down.

"At this point—in February of this year—the manager of the Northern California Electrical Bureau brought Walter Doty, editor of *Sunset* Magazine, down to see the tract, the buildings of which were still in the framing stage.

"The whole theme of this project was coordination among the various interested parties. For example, Doty recommended to the builders certain radical structural changes, even to the point of eliminating one wall between the living room and dining room. Many builders would not have made any such concession.

"Then the builder, the utility company representatives, and the magazine editor discussed the matter of interior decorating and furnishing. Obviously, a wonderfully lighted home could be made to look ridiculous, if it were garishly painted and furnished. The largest furniture store in the area, Robinsons, which customarily did not participate in model home projects, was delighted to cooperate in this one, color designs being chosen by its interior decorator after conferences with the interior designer retained by *Sunset* Magazine and one retained by the Northern California Electrical Bureau.

"Now, as regards wiring and lighting costs, the electrical contractor's original bid was $195 for wiring, plus $25 additional for fixtures, or a total of $220 for the entire job. To wire the home to conform to Adequate Wiring standards, he charged $62.50 additional; for the electric range service, $40; for the new lighting fixtures, $548, and additional wiring for same, $228, or a total wiring and fixture cost of $1,145.90.

"As regards the portable lighting in this house, it is significant that after several weeks of searching for appropriate CLM portable lamps, it was finally necessary to order them air express from Chicago. It would seem that if existing home owners should desire to improve their lighting, because of the publicity given Sunrise House, CLM lamps should be more readily available.

"Many of the houses in Blossom Hill Manor have already been completed and sold and more are in various stages of construction. All are being adequately wired and will receive AW certificates. Foundations for an additional 40 homes, which will also be adequately wired, are about to be poured. Our adequate wiring representative, W. M. Wheeler, did much to bring this all about.

To capitalize on the effort and expense involved in Sunrise House, the model home, flat prices for each built-in lighting fixture installed are available for the hostess, the realtor, and the utility representative on the premices, as all Blossom Hill Manor homes are sold prior to completion of construction. The home buyer may, and is urged, to have the various built-in lighting units he desires incorporated in the home of his choice for the additional cost specified."

Lighting Features

Original lighting design for the home was done by Beth McCrone, consulting engineer, who had trained at Nela Park. Some modifications were later made in her drawings as changes were made at the *Sunset* editor's suggestions.

Primary lighting for the living room and dining room comes from valance concealed, slimline, single-tube units mounted on Garcey strips. These illuminate the draperies and they in turn diffuse a pleasant level of light throughout the room. The new deluxe warm white (with red phosphor) lamps were used. The living room in addition has six Kurt Verson recessed down spots containing R-40 150-watt lamps. These give the added light needed at chair and couch locations for reading or sewing. Recessed, the brightness is shielded in a ceiling that is well illuminated from reflected light off of light-colored furnishings and rug.

In the master bedroom above the bed a dropped cove contains two 96-in. warm white slimlines. The cove is covered with an Albolite glass panel. In another room a similar but shorter cove with a 42-in slimline is mounted along the wall over a desk, lighting both the wall above and the wall and desk below in a well-diffused illumination.

The all-electric kitchen originally was laid out to be lighted by two recessed ceiling coves in which slimlines were to be mounted but this was changed. Instead four recessed Pryne units with 100-watt incandescent lamps were installed. Over the service and snack counter between the kitchen and dining room two recessed spots were mounted to shine down on the counter. A modern flat glass ceiling fixture is placed in the center of the dining room ceiling over the table.

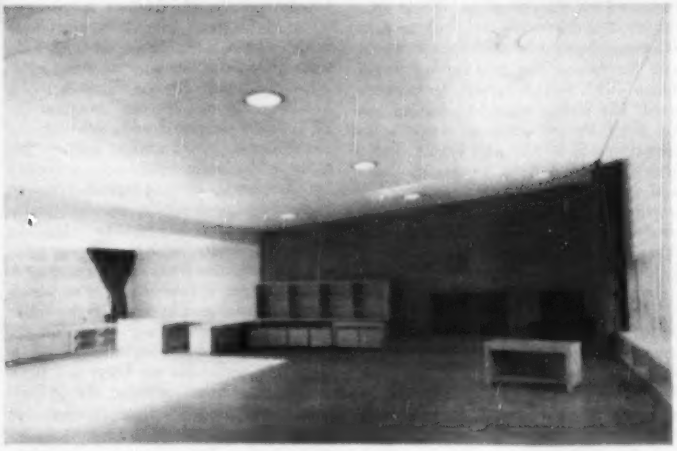
Bathroom equipment drew much attention, including a built-in bathroom electric heater. Both sides of the mirror are lighted by Isco bracket fixtures in which 20-watt deluxe warm white fluorescent lamps are used. A vapor proof recessed shower unit also was included.

All of the ballasts for the fluorescent lamps were mounted in the attic space to remove possible noise from the living area. Outside lighting for floodlighting the garden and driveway completed the lighting facilities provided.

Sunrise House was on display from June 4 to July 30 and several thousand visitors went through it. On opening day some 6,000 went through. The house was featured in the *PG and E Progress*, to all that company's customers; in a two-page spread in the August issue of *Sunset;* in newspaper publicity, advertising by the PG and E and in brochures distributed at the home itself. Thus one hole was punched into the gloom trend in present-day home (lack of) illumination.

Electrical Features for Statler

When the new Statler Hotel and office building is finished in Los Angeles, it will be the largest hotel constructed in the last 20 years, have 1,275 rooms, each equipped with television, and contain a great many electrical features. Stetson Electric Co., Los Angeles, was recently awarded the $1,100,000 electrical contract. Among the features will be neon tubing fixtures in the main ballroom, controlled by dimmers, and operated from a portable control booth; an electrically powered central registration desk in the hotel lobby which will revolve; escalators to the main lobby for guests and luggage; speakers platform which can be raised and lowered in the main ballroom; complete air conditioning, etc. An office building will be built simultaneously with the hotel and have access to all hotel facilities. Ed J. Carpenter will be job superintendent for Stetson Electric.



Lens Lighted School

Schoolroom illumination from recessed incandescent fixtures with light controlling lenses is proving satisfactory in several Washington communities. The artificial illumination is part of an over-all design to control the brightnesses in the field of view in each of the rooms. This means use of light-directing glass bricks in side and clerestory windows, specification of reflection factors for the paint, chalk boards, woodwork, desks and floors as well as the ceiling built-in units.

Manette School, at Bremerton, is pictured here. Day and night pictures of two typical classrooms and the kindergarten are shown. The difference in the two classrooms is that in one the windows face North and there is a clerestory window of prismatic glass block high on the south side to give bilateral daylighting. In all rooms the lower portion of windows only have clear glass, prismatic glass running the remainder of the way to the ceiling. In the pictures the desks are dark but new desks are of light finish.

Architects for Manette School were Williams & Branch; the electrical and mechanical engineer was C. M. Davis, all of Bremerton. They specified much use of color but kept all shades light for best lighting results. Plans called for reflectances of not less than 80% for ceiling, 50% for walls, 40% for desks and 30% for floor.

Lighting in all classrooms, kindergarten and cafeteria-assembly hall was done with Holophane recessed 300-watt lamp units. Classrooms also have two blackboard units for the green chalk boards. Illumination at desk level is 38 f-c. Each 24x38-ft. classroom has twelve general lighting units.

The same architects and engineer used similar lighting in Central Kitsap School at Silverdale. A like installation but with square units was used in five schools done by Annand & Kennedy, architects, and Ray Preston, electrical engineer, in northwestern Oregon. An addition to a school at Coulee Dam uses similar technique.

Day and night appearance of typical classrooms and kindergarten at Manette School

Many think the ultimate in illumination is to create as near a natural "sky" indoors as possible; this was done at Pitts trunk store where—

SKY IS THE LIMIT

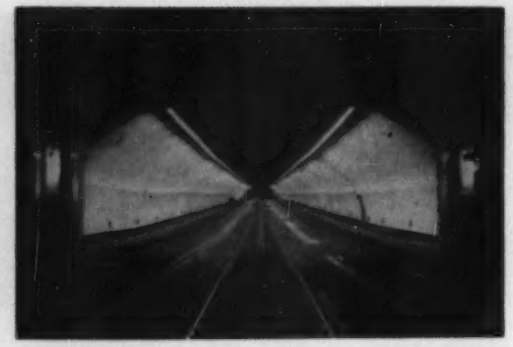
Whereas an atmosphere of intimacy was wanted at the fountain bar of Bigham St. Pharmacy, a punch of light was wanted on the merchandise and the "sky" was subdued somewhat

Contrasting methods of lighting a store are pictured here, both appropriate to the merchandising task to be performed.

Above is Pitts the Trunk Man store at 1045 6th Ave., San Diego, where California Electric Works installed a Skyglo luminous louvered ceiling by Benjamin Electric & Mfg. Co. and created an artificial sky over the entire front of the store. Under this high intensity of shielded direct illumination from parallel rows of fluorescent lamps above the ceiling, all details of the luggage and merchandise are distinctly seen. Under the mezzanine, flush-mounted units were installed; over the mezzanine, units are mounted on the ceiling.

At left, how a pioneer pharmacy, Bigham St. Pharmacy, at East S. Temple, Salt Lake City, was remodeled and relighted recently. Here the stepped system was used to provide a 15 f-c intensity in the main circulation area and intensities up to 110 f-c in the display cases. Noel Pool, architect and designer, was aided by Clark B. Newell, Utah Power & Light, and C. J. Vacher, G-E Supply. A. N. Sisan was electrical contractor. Neon tubing from Young Sign Co., in pink was used over the soda fountain for atmosphere; white above the back bar. Slimlines lighted the show cases and window; spots punched light down on the counters.

Old sodium vapor tunnel lighting was spotty and of low intensity



Two lines of slimline fluorescent lamps prove entirely adequate

Slimline Provides New Tunnel Lighting

T. G. Bristow

San Francisco Department of Public Utilities

Recently installed slimline fluorescent lighting in the Stockton Street tunnel in San Francisco introduced some new illuminating techniques. The tunnel, adjacent to the main business district, is approximately 885 ft. long and is used for automobile, street car and pedestrian traffic.

The lighting consists of two continuous rows of baked enamel slimline fixtures, installed 17 ft. 3 in. above the pavement, using single 96-in. T-12 lamps with 425-ma. ballasts and open bottom reflectors. A total of 110, 16-ft. units was installed. Each unit consists of two 75-watt tubes and one 30-watt ballast. Among the advantages of these tubes are (1) no starters required and (2) long life.

The fixtures are provided with raceways, over and separated from the ballast. Two 3-wire circuits are installed in each raceway, extending from three-wire 120/240-volt services at each end of the tunnel to the center of the tunnel. Fixtures are alternately connected to the 3-wire circuits. This resulted in a minimum of surface conduit, as it was necessary to abandon all conduit originally installed in 1914 for use of the original incandescent lighting and later for the sodium vapor lights. It also provides for flexibility in operation. With one side of each 3-wire service out, it would result in every other fixture in each row being lighted. It is contemplated to operate the lighting in this manner at night.

More Lighting Required in Daytime

The transition from outdoor sunlight to the light in the tunnel necessitates higher tunnel lighting levels in the daytime for optimum brightness. Normally this would be so, particularly near the portals. However, the proximity of the tunnel to the business district, with the slow driving speeds through the tunnel, and its relatively short length eliminate the need for step control of intensity. The transition between low-level street lighting and the interior of the tunnel allows lower levels of tunnel lighting at night.

Results

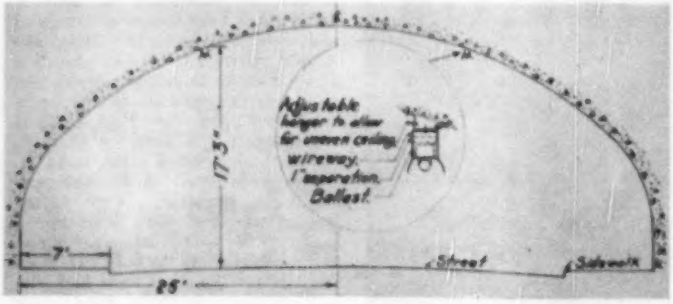
Practically uniform brightness and foot-candles, necessary for safe, comfortable driving, have been obtained. There are no concentrated light sources with their consequent eye disturbances. The white tile walls and the pavement are uniformly lighted, with no scalloping effects.

Pedestrian traffic is also greatly benefited. The uniformly lighted tunnel keeps crime to a minimum and provides less traveling for many pedestrians, who formerly preferred a longer, better lighted route.

The year-around temperature in San Francisco is such as to make unnecessary any compensation for decline of light from the lamps due to low temperature.

Maintained foot-candle readings with the former sodium vapor lights immediately prior to their removal, varied from .3 between units, to 1.8 directly under the units. Initial readings with all the new fluorescent lamps burning were practically uniform at 8 f-c. This is approximately eight times the former illumination. After one month in service, with continuous burning, the readings were 7.5 f-c.

The installation, including fixtures, was designed by the Bureau of Light, Heat & Power under B. A. Devine, manager and chief engineer. H. C. Reid & Co. installed the fixtures which were supplied by the Ruby Lighting Corp. of Los Angeles.

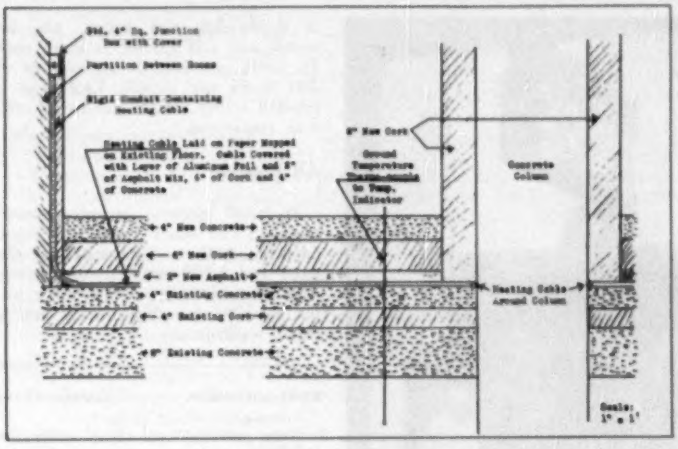


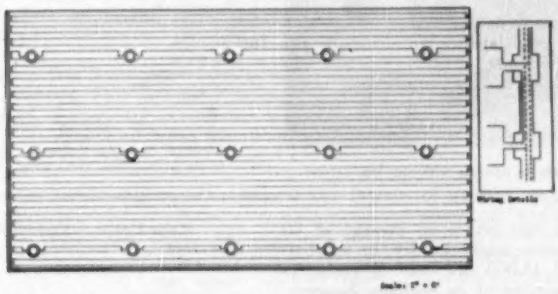
Mounting of raceways on curved tunnel ceiling resulted in a minimum of surface conduit

NORTHWEST ELECTRIC LIGHT AND POWER ASSOCIATION

Utilization Data Sheet No. 70

SUBJECT: Protection of Building Foundations by Means of Soil Heating Cable
CUSTOMER: Ogden Quick Freeze & Storage Co., Ogden, Utah
TYPE OF BUSINESS: Freezing & Storage
SERVICE COMPANY: Utah Light & Power Co.
DATA PREPARED BY: A. N. Vendell


Heating Cable Laid on Paper Mopped on Existing Floor. Cable Covered with Layer of Aluminum Foil and 2" of Asphalt Mix, 4" of Cork and 4" of Concrete
4" New Concrete
6" New Cork
2" New Asphalt
4" Existing Concrete
4" Existing Cork
8" Existing Concrete
Concrete Column
Heating Cable Around Column



Ogden has a large concrete block quick-freeze processing plant where first floor temperatures range from 10° to 20° below zero. A nearby river causes ground water to rise to within 3 ft. of soil surface level at some seasons of the year. After about three years cracks developed in the lower floor slab and around the columns supporting the upper floors. Movement of as much as 8 in. was noticed.

It developed that the low temperatures required in the large rooms on the ground floor had traveled down the supporting pillars to their foundations. The intense cold had also penetrated through the ground floor heat insulation to such an extent that a solid block of ice had formed to a thickness of 8 ft. under the building. The expansive force of freezing water had raised the building above it and caused the trouble mentioned.

The owner had planned a steam-hot water pipe installation under the affected portions of the building before the utility heard of the trouble. The use of electric heat was suggested as a more economical and a more easily controlled heat medium than either hot water or steam. High-current, low-voltage steel cable was first considered. Later lead-sheathed heating cable, similar to that used for hot beds and keeping ice out of down spouts, was decided upon.

The installation consists of approximately 10,000 ft. of heating cable. Cable was laid on the existing concrete floor after it had been covered with heavy paper and sealed with hot tar. The heating cable was then covered with reflector aluminum foil, over which were laid in successive layers 2 in. of asphalt mulch, 6 in. of insulating cork and 4 in. of new concrete floor. Heating cable was also wrapped around the supporting columns and heat insulation applied. Eight thermocouples were placed in various parts of the building to obtain correct temperature readings at ground level for each room.

An eight-station Brown Electronic Precision Indicator is used to measure temperature. Ground level temperature is maintained at approximately 32°. The inside of the cabinet is heated to about 70° by means of a small incandescent lamp. All service wiring to the heating cable is in conduit. Service is supplied to the installation at 240 volts.

Heating cable in lengths of 145 ft. is installed on 1-ft. centers. Cables are wired in series (see diagram) to insure long life.

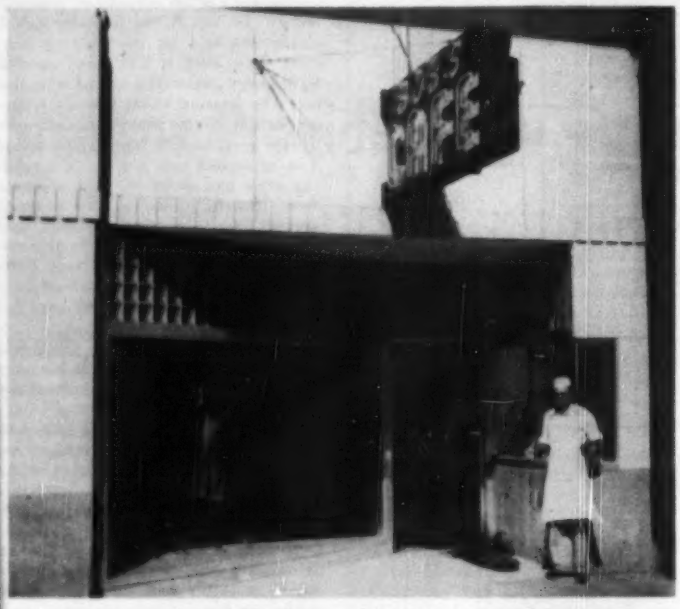
Ground level temperatures are taken daily in all the first floor rooms. When the ground level temperature drops to 29°F., the electric heat is turned on and stays on until the ground level reading is 33°F.

The installation was completed in October 1949. Operating data will have to be estimated as part of the freezing space was used for cold storage with temperatures around 35°F. above zero. However, for the months of February and March of this year all space was used for freezing. The heat is turned on in one or all four rooms according to the ground floor temperature. The heating cycle is approximately one month, requiring seven days to raise the temperature 4° and three weeks for the temperature to drop 4°, so that the heat is on approximately 25% of the time. On this basis, with a connected load and demand of 20 kw. the estimated monthly consumption is 4,800 kwh.

NORTHWEST ELECTRIC LIGHT & POWER ASSOCIATION

Utilization Data Sheet No. 71

SUBJECT: All-Electric Cooking Plus Water Heating
CUSTOMER: Bob's Cafe—Grace, Idaho
TYPE OF BUSINESS: Cafe
SERVICE COMPANY: Utah Power & Light Co.
DATA PREPARED BY: Harold Swift



Automatic features of electrical appliances enable cafe to operate with one less person

This is a small, short-order cafe in a town of about 600 population, drawing, however, from a large surrounding rural area.

The cafe serves an average of 50 full-course meals per day, or approximately 18,000 per year. A considerable portion of its business, however, is sandwiches and coffee, pie, ice cream and soft drinks. It stays open 16 hours per day, or an average of 480 hours per month. Last year it grossed nearly $30,000, and with only four employees.

All Electric

It is all electric, including water heating. The water heater is 40-gal. capacity, with a 1,500-watt top element and 1,000-watt bottom element. This heater supplies adequate hot water at 170° for dishwashing and a small washroom.

Equipment Installed	Connected Load
2 Refrigerators—7 and 12 cu. ft.	
1 Water heater—40 gal.	2.5 kw.
1 Griddle	6.0 kw.
1 Domestic range	12.0 kw.
3 Slice toaster	2.0 kw.
1 Fry kettle	4.0 kw.
1 Hot plate	2.0 kw.
1 Coffee maker	2.0 kw.
1 Hot cup	.660 kw.
Total connected load	31.16 kw.

Average monthly demand, 10 kw.
Average monthly kwh. used, 2,600

	Lighting Schedule 7		Water Heating Schedule 5		Fuel Schedule 8		Total	
1950	Kwh.	Bill	Kwh.	Bill	Kwh.	Bill	Kwh.	Bill
January	360	$16.50	830	$ 8.55	1,780	$37.22	2,970	$62.27
February	290	13.25	750	7.75	1,540	35.60	2,580	56.70
March	344	15.78	946	9.71	1,564	35.76	2,854	61.25
April	402	18.39	866	8.91	1,732	36.89	3,000	64.19
May	348	15.96	860	8.85	1,700	36.68	2,908	61.49
1949								
June	302	13.89	776	8.01	2,218	55.27	3,296	77.17
July	282	12.99	1,110	11.35	1,774	37.17	3,166	61.51
August	308	14.16	460	4.85	1,030	28.71	1,798	47.72
September	270	12.45	680	7.05	2,664	43.18	3,614	62.68
October	318	14.61	776	8.01	1,846	37.66	2,940	60.28
November	314	14.43	742	7.67	1,724	36.84	2,780	58.94
December	288	13.26	796	8.21	1,660	36.41	2,744	57.88

Water Heater Consumption	
June 1949	776
July 1949	1110
August 1949	460
September 1949	680
October 1949	776
November 1949	742
December 1949	792
January 1950	860
February 1950	866
March	946
April	750
May	830
Total 1 year	9,588

The owner, Bob Hill, states that, with the counter cooking appliances and electric range with their automatic features, he operates with at least one less person than he could otherwise. He states, further, that at no time has the hot water been depleted.

ELECTRICAL WEST Contractors' News Letter

QUICK NEWS ON TRENDS, LAWS, CODES, MATERIALS, EQUIPMENT, COSTS, WAGES, ETC.

Up scale

Los Angeles NECA settled with the local union for a 12½c raise, without vacation, as of Aug. 28. Negotiations have been going on since April. This rate will hold until next April. Required 17 meetings.

Roll your own

Read the papers and financial sheets and make your own predictions. Nothing is clear enough for this lettter to stick its neck out. Hoarding seems to have tapered off. Building is still booming. Employment is high and skilled men at a premium. Congress hasn't yet decided what controls to put on. However, except for converting, not many big war projects are expected. Uncle Sam has a lot of surplus factories now. The full effects of all this may not hit for some months yet. It might be a good idea to tighten belts.

Change

I. W. Rodgers, secretary of Pacific Electrical Contractors Assn., Portland, has resigned to take a government job in southern California and Roscoe E. Watts, editor of the association paper and plumbers association secretary, has been named in his place. Reorganization is planned and a stronger program is promised. The group is working on a bid depository.

Hot line

Federal Electric Products Co. held a big open house at its new Los Angeles factory, 2885 East Washington, introducing its sensational new circuit breaker and panel Stab-lok line, Aug. 10-11. Before only packaged goods could be handled but the plant has facilities now for making switchboards and panelboards, gutter, duct, etc. Having a full line of components the panels are entirely Federal. Mass production makes possible standard breaker assemblies at less than fused switch prices, according to L. P. Shelley, Western division manager.

Adds up

Beginners Math and algebra as well as estimating take-off and materials are to be taught at Denver's Opportunity School this winter, following last semester's successful blueprint reading class. Elementary, medium and advanced classes are planned so as not to hold up anyone.

Fans instead

Apologies to the Torrington Manufacturing Co. for putting them into the bearing business. This company makes fan blades and blower wheels and its product is used by a number of electric fan manufacturers. Torrington Mfg. Co. has issued the fine booklet, however, "How to Have Comfort from Moving Air."

Play up light

Southern California Edison is making a big feature of lighting at its exhibit at Los Angeles County Fair at Pomona early in September. Had six booths for commercial and industrial lighting—one a show window, a commercial interior, office, industrial, school and one a black light show. The domestic show will have a model "Horizon House" to feature home lighting. The exhibit will be made in portable sections which can be used at other fairs and shows.

New design

A fluorescent school luminaire having some of the advantages of the concentric ring incandescent fixture has been designed by Willis Lipscomb, electrical engineer, San Diego, and an installation of them has been made at Logan School.

Motor safety

Motor control panel safety requirements proposed by the California Division of Industrial Safety were a hot subject at the last Southern California Chapter, IAEI meeting at Long Beach. The state wants separate overcurrent devices for each motor and barriers between them if they are mounted in the same enclosure. Manufacturers asked that Underwriters Laboratories prepare new standards for them, to eliminate confusion.

Expands

Pressed Steel Co. of Berkeley has a new line of popularly priced die-cast Swivolites in grey, chrome, bronze, green and coral. They are sold through wholesalers. This Berkeley company was developed by Press Jones, an electrical contractor. He now finds the manufacturing business overtaking contracting in importance.

Progress parade

Highlight of the IES convention is usually the "Progress Report." At Pasadena last month Alston Rodgers, showman impressario from G-E Lamp at Nela Park made it so again. Well known in Los Angeles, it was a kind of homecoming. Among the new things in lighting equipment he showed in rapid-fire order, and all anonymously, are many that every contractor and engineer should follow up on and use. These things are on the market—

Inkies

In incandescent lamps—the new 50GA lamp with built-in shade for residential bare lamp fixtures . . . A lightly frosted hard glass 300-watt R-40 bulb with a narrower beam for longer throws . . . A new large reflector lamp, 500-watt, for high bay industrial lighting, needs no reflector . . . A new PAR-56 300-watt with a mogul end, prong base with a 100,000 cp beam . . . A line of street lighting lamps with a weather-resistant coating on the bulbs to reduce lamp failures . . . Two new types of Christmas tree lamps, one with inside coating, the other ceramic coating.

F. lamps

Fluorescent lamps and accessories—The new deluxe white fluorescent lamps with a richer red in them . . . New lamp bases for the 96 and 72 in. single pin lamps . . . A low brightness 40-watt T-17 lamp, single pin . . . Krypton filled lamps for improved starting and operating which produce more light . . . A new "black light" blue glass from which hot or cold cathode lamps can be made to produce more uv and less visible light . . . New "trigger start" ballasts in relatively small, low cost equipment . . . A new development in ballasts is the sequence-start, series-operation, high power-factor ballast, saving weight, size and materials.

And glass

New glasses—A new inexpensive, light weight, water white glass in longer lengths . . . One company is making light weight lens panels from it for fluorescent luminaires, 1/3 as heavy as former glass and long enough to cover 96 in. tubes . . . Photosensitive opal glass making a Fotalite glass with haze free surface and with a sharp egg-crate louver photographed into it. Another has louvers at a 30° angle in it . . . New lightweight opal glass for globes for residential fixtures.

Plastics

Plastics—A variety of corrugated plastic sheets, one type in large panels. Another a very thin but quite rigid sheet with closely spaced corrugations that can be rolled up, easily cleaned. Very lightweight, anti-static and rated self-extinguishing . . . Flat strips of extruded vinyl plastic with channel-like corrugations of square cross-section . . . A new translucent material combines plastic and glass fibers, made up in large corrugated sheets. Can make luminous panels of it, sign backgrounds, etc. . . . A new suspension system for acoustical ceilings and a new acoustical material that is white, porous, with 75% reflectance and stands repeated paintings.

Fixtures

Incandescent Fixtures—Several new designs of louvered or concentric fixtures using silvered bowl lamps . . . One has an outward flare at the top of the rings to reduce its height and still shield the lamp . . . A reflecting dome or coffer using a silvered bowl lamp, recessed in the ceiling, with a spun metal shield to hide the lamp . . . A swivel arm for portable lamps with internal commutator rings to permit free motion without twisted wires.

Fluorescent

Fluorescent Fixtures—A line of commercial fixtures offering a choice of control media, glass lenses or plastic plates or louvers . . . A semi-indirect luminaire that is a large plastic tube, the top half of which is clear while the lower half is white opal plastic, totally enclosing two lamps . . . Commercial fixtures with variable angle louvers . . . A low-cost industrial lighting unit with a fold-away design to make for economy in packaging and assembly . . . A rather sensational fixture which can disconnect and lower its lamps and ballast channel on counterbalanced cable reels for relamping and cleaning, using a long key-stick . . . A packaged lighting system in one unit which unfolds to mount 8 96-in. slimlines to cover an 18 x 10 ft. ceiling area.

Sundry

Other lighting devices included many swivel and spot light mountings, one for mounting on a power duct; a system of 4-watt fluorescents in a restaurant on tables, drawing energy from radiation in a grid above the ceiling; new luminous signs of plastic; a line of residential valance units which can be used singly or added together, even containing the curtain rod; a telescoping lightweight pole and sockets for backyard sports lighting.

Electric House Heating Load Characteristics

Unrelated data here correlated for the first time yield information necessary in determining the cost of servng electric space heating

R. E. Sinclair
Pacific Power & Light Co.
Portland

What is the cverage coincident peak demand of electric space heating in the average size house? This question must be answered to determine the effect of such a load on generating plants, transmission lines and substations. To that end various space-heating tests conducted in recent years in the Pacific Northwest have been analyzed and the results are here presented.

Diversity Factor

A house is an imperfect container of heat. In cold weather heat escapes to the atmosphere at a rate depending on the difference between inside and outside temperatures, wind velocity, the size of the house, the extent of insulation, and other factors. To maintain comfort a desired temperature is first attained. From then on heat must be added at a rate to equal the heat lost to the outside.

In mild weather individual electric heating units may be "off" more than "on." Demand will be much less than total connected load. The effects of diversity are then apparent. As the weather becomes progressively colder, the heating plants remain "on" for longer and longer periods. There is more overlapping of operating periods of one house with another. The diversity factor decreases.

The total electric house-heating demand in a community will be the sum of the coincident demands of the individual houses. Invariably demand is greatest in the morning, when inside temperatures after having been lowered during the night are being brought back to daytime levels. Our purpose was to evaluate the average coincident morning peak demands of the average house under various temperature conditions. This figure for a particular temperature should be such a quantity that, when multiplied by the number of electrically heated houses in the community, will provide a product equal to the total space-heating morning peak load. Emphasis is placed on the morning demand because, with an appreciable saturation of house heating, its effect on the utility's load will cause the system peak to shift from evening to morning.

Characteristics of Demand

A valuable contribution to our knowledge of rates of heat-loss was made by Washington State College.* Experiments were conducted on a group of unoccupied houses. Each house was heated electrically, and a constant temperature was maintained throughout all rooms. By observing the rate of electric energy flow into the house, the rate of heat-loss to the outside was determined for various differences between inside and outside temperatures. The result of the test on one of the houses is shown as curve A, Fig. 1. The fact that this house was 4,880 cu. ft. in size and uninsulated is of small import for purposes of this discussion. What is of interest is the shape of the curve. When there is no temperature difference between inside and outside the heat-loss is zero. As the temperature difference increases, the heat-loss increases at an ever increasing rate. This may be explained by the fact that some heat is lost by radiation. There will be, therefore, a component of the heat-loss which will increase as the difference of the fourth powers of the inside and outside temperatures as stated by the Stefan and Boltzman law. This curve is presented to show the nature of house-heating demand when not influenced by an occupant's habits.

As a clue to the total rate of heat-loss of many buildings under actual living conditions, information on rates of steam use for space heating was obtained from a central steam-heating utility serving 850 customers. A total of 469 observations of daily peak-hour demands and respective minimum morning temperatures was made. Those within each 5°F. temperature range were combined by deriving a weighted average of demands and a weighted average of temperatures. Because individual daily readings of peak-hour demand are influenced not only by outside temperature but by conditions of wind, sun, humidity, previous heating, and users' habits, they do not form a close pattern when plotted on a graph. For this reason averaging was necessary to obtain a true trend of the curve. The resulting points formed curve B, Fig 1. As may be observed no steam is used for space heating until the minimum morning temperature drops below 58.5°F., and that with lower temperatures the use of steam increases at an ever decreasing rate.

The radical difference between curves A and B is because of several factors. Curve A, representing the heating rate of a single unoccupied house, has no benefit of diversity with other houses or of the economies which would be practiced by an occupant. Curve B demonstrates the fact that, to save on heat in colder weather, many people reduce the temperature in seldom occupied or unoccupied rooms. Also, where some windows are open in mild heating weather, these windows are closed in colder weather. These factors all tend to save heat and contribute to shaping curve B. Then too, some buildings have heating systems which become fully loaded in only moderately cold weather. With colder weather no more heat can be consumed by these systems, and they will not contribute further to increasing the total heating load.

When minimum morning temperatures are above 58.5°, little or no steam heat is used for space heating. By the time the business day starts the outside temperature will have risen appreciably above the morning minimum. Then, too, the carry-over of heat in the buildings from the previous day is considerable. Often this is sufficient to preclude need for additional heat in mild weather.

Size of Average House

The foregoing discussion of the peaking of steam-heat load will help in evaluating information on the subject of serving many electrically heated houses. As one of the first steps

* Comparative Heat Loss Tests on Insulated and Uninsulated Buildings," H. V. Carpenter, H. J. Dana, and R. E. Lyle, Washington State College, Engineering Bulletin No. 45.

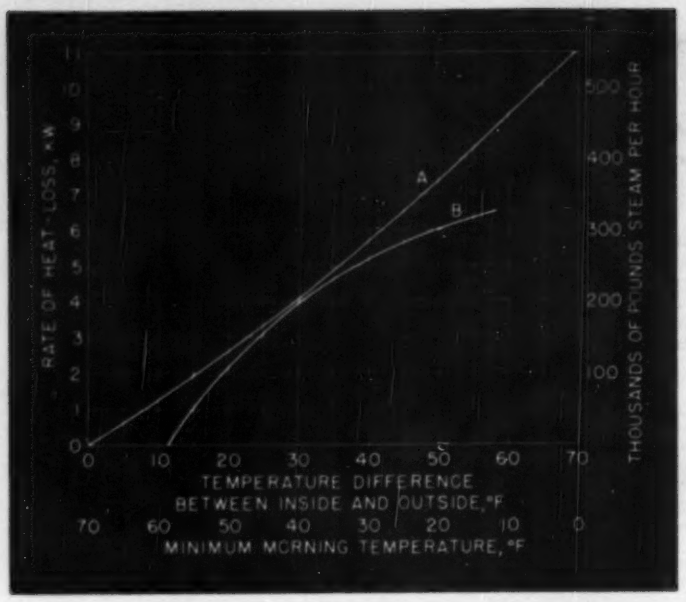


Fig. 1

in analyzing the characteristics of electric space-heating loads, the size of the typical or average house was first determined. Many tests have been made on electrically heated houses. For general use the data must be related to the house of average size and insulation.

Records were maintained on 350 applications for electric heating service for dwellings of various dimensions. These were found to average 6,940 cu. ft. in cubical content. From this we have assumed 7,000 cu. ft. as the size of the typical heated space. This may appear small, but many of the applications were for apartment and court-style dwelling units. These 350 dwelling units have an average of 67% of walls and 95% of ceilings adequately insulated.

Average Coincident Peak Demand

No space-heating tests on a large group of houses having the foregoing specifications were available. Reference was therefore made to the Portland General Electric Co.'s demand tests** on some 50 or more electrically heated houses of about 10,000 cu. ft. size. Some of the houses have radiant-convection heaters, one or more to a room, and the others have central heating systems. Recording demand meters were placed on the space-heating equipment of the houses. Each week the charts were removed and the demands for each half-hour period for each of the two types of heating equipment were added. That is, the demands of the radiant convection systems were added together, and the demands of the central systems were added together. By dividing the totals by the appropriate number of houses, the average coincident demands for each type of equipment were determined. The largest coincident demand of each day for each type of system was termed an average coincident peak demand. One hundred and five of these values for each of the two types together with the respective minimum morning temperatures were used in our analysis. The average coincident peak demands invariably occurred in the mornings

There are in use about four radiant convection systems to one central system. To determine figures representing electric space heating in general, the average coincident peak demands for each day were averaged and weighted, four radiant convection systems to one central system. The result was 105 average coincident demands, each embodying some characteristics of both kinds of heating systems. Each of these 105 average demands was then arbitrarily reduced in the proportion that the radiating area of the 7,000-cu. ft. average house is less than that of a 10,000-cu. ft. house similar to those actually tested.

As in the steam-heat analysis, the electric demand figures in each temperature band were averaged, and their respective temperatures were averaged. The result is the six points forming curve C, Fig. 2, which is the average coincident peak demand for the average house versus minimum morning temperature.

When the demands of the six points were plotted against the logarithms of the differences between 70° and the outside temperatures, a straight line was formed. This permitted us to solve for the curve's equation which proved to be $K = 9.72 \log (70\text{-}T) - 10.66$, where K equals average coincident peak demand in kw., and T equals minimum morning temperature in degrees F. This equation was plotted as curve D. Fig. 2. It is actually an extension of curve C into temperatures colder than those experienced in the tests. From curves C and D we obtain the values given in Table I.

The similarity in shape of electric demand curve C with the steam de-

** Electric House-Heating Tests in Oregon," W. L. Sharp and A. E. Opdenweyer (both of Portland General Electric Co.), AIEE Miscellaneous Paper 48-95, December 1947.

Fig. 2

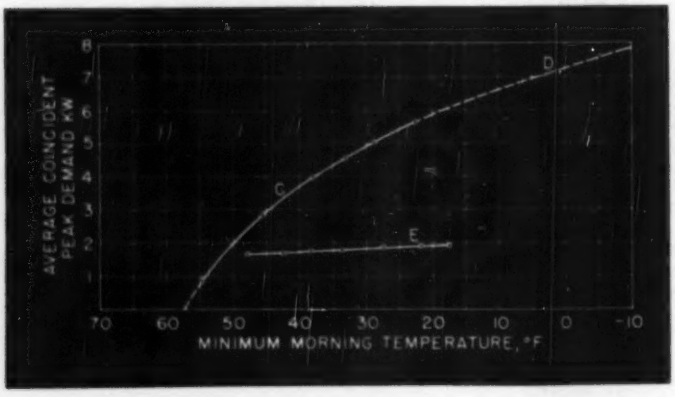


Table I, Demand

Minimum morning temperature	Average coincident morning peak demand for average house (7,000 cu. ft.)
57.5° F.	0.0 kw.
50	2.0
40	3.7
30	4.9
20	5.8
10	6.6
0	7.2
—10	7.8

Table II, Energy Consumption and Load Factor

Annual degree-days	Annual energy consumption by average house (7,000 cu. ft.)	System annual load factor for space-heating Annual minimum temperature —10° F. Average coincident peak demand 7.8 kw.	0° F. 7.2 kw.	10° F. 6.6 kw.	20°F. 5.8 kw.
3,500	7,700 kwh.				15.1%
4,000	8,800			15.2%	17.3
4,500	9,900		15.6%	17.2	19.4
5,000	11,000	16.1%	17.5	19.1	21.6
5,500	12,100	17.7	19.2	21.0	23.8
6,000	13,200	19.4	21.0	22.9	
6,500	14,300	20.9	22.6		
7,000	15,400	22.5			

mand curve B is readily apparent. One corroborates the other. The same factors that were discussed as causing the shape of curve B will apply equally to curve C.

Energy Consumption

The annual kilowatt-hour use by the average dwelling unit for space heating may be determined by using its heat-factor. Heat-factor equals the kilowatt-hours used per degree-day per 1,000 cu. ft. of volume as determined by test.

An analysis of 159 houses using electric heat indicated that the heat-factor, when weighted four radiant convection systems to one central system, and adjusted for 94% adequate ceiling insulation and 67% adequate wall insulation is 0.314 kwh. per degree-day per 1,000 cu. ft. volume. Thus for the average house of 7,000-cu. ft. volume in an area experiencing annually, say, 5,000 degree-days, the annual energy consumption will be 0.314 kwh. (7,000/1,000) x 5,000, or 11,000 kwh. per year. Consumptions for other degree-day conditions are shown in Table II.

Load Factor

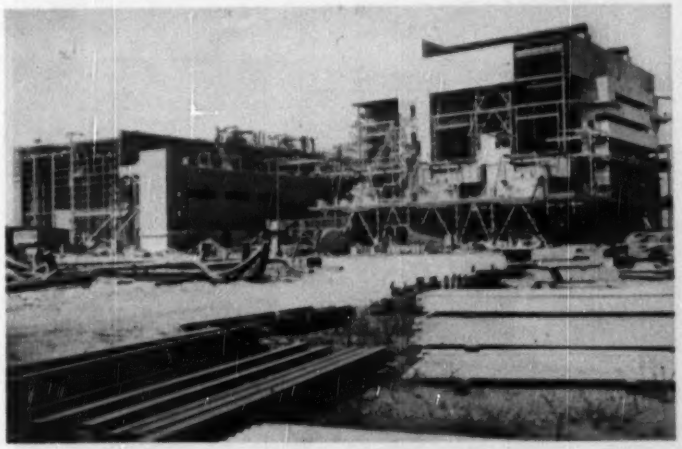
The annual load factor for electric heating on a system basis (not on an individual house basis) will be a function of the average coincident morning peak demand and the average annual kilowatt-hour consumption for heating. In an area having a minimum temperature of 10°, the average coincident peak demand will be 6.6 kw. per house (see Table I). If there are, again say, 5,000 degree-days, the probable average energy consumption will be 11,000 kwh. per year. The annual system load factor will be 11,000 kwh./(6.6 kw. x 24 hr. x 365 days) = 0.190 or 19.0%.

Other load factors are given in Table II.

It is of interest to note that the so-called non-heating customer registers an increase in coincident demand with colder weather. This was determined from test data provided by the Bonneville Power Administration. A recording demand meter was set on a feeder serving 267 houses having 100% saturation of lighting, electric ranges, and water heaters, but no electric space heating except incidental. By averaging 99 observations of average coincident demand and averaging the respective minimum morning temperatures, the seven points forming curve E, Fig. 2 were determined. It is apparent that there is an increase in coincident demand of about 0.220 kw. per house as the outside temperature drops. This is caused, probably, by the use of incidental space heaters or range ovens. This increase, although moderate on a single-house basis, will have a large cumulative effect when applied to thousands of residential customers. It is a factor to be taken into consideration.

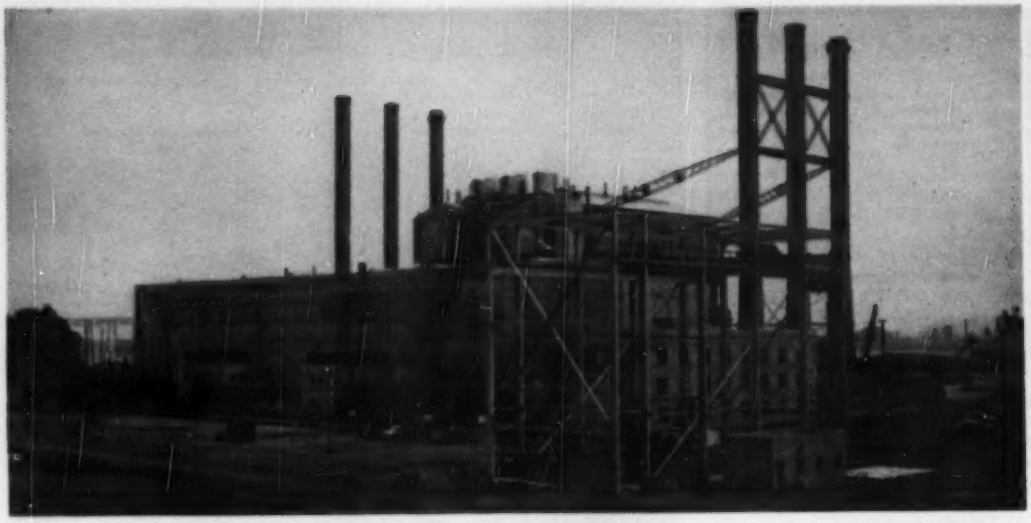
Conclusion

The important point discussed here is the determination of the average coincident peak demand for space heating. If a utility is serving 10,000 electric house-heating customers, and the minimum temperature liable to be experienced is, say, zero degrees F., then the peak demand produced by this load will be 10,000 x 7.2 kw. (from Table I) or 72,000 kw., not including transmission and distribution losses.



Contra Costa Steam Plant

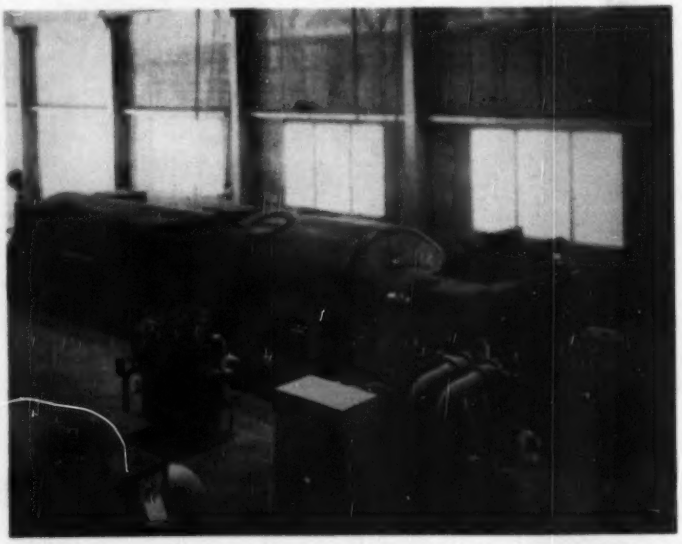
CONTRA COSTA steam plant at Pacific Gas and Electric Co. near Antioch, Calif., showing turbine room at left and boiler house at right. Six radiant-type, water-tube boilers will supply 3,300,000 lb. of steam per hour at 950° and 1,300 psi to three 100,000-kw. tandem-compound turbogenerators. Plant will be completed by the summer of 1951. PG and E will then have brought in 1,362,500 kw. of new generation in the first five postwar years in an $800,000,000 expansion program. Power will be stepped up for transmission at 220 kv.



Moss Landing 300,000-kw. steam plant is part of Pacific Gas and Electric Co.'s $800,000,000 postwar expansion that will add 1,362,500 kw.

Another 100-Mw. Steam Unit for PG and E

Centralized and automatic control to save operating labor is a feature of Moss Landing plant

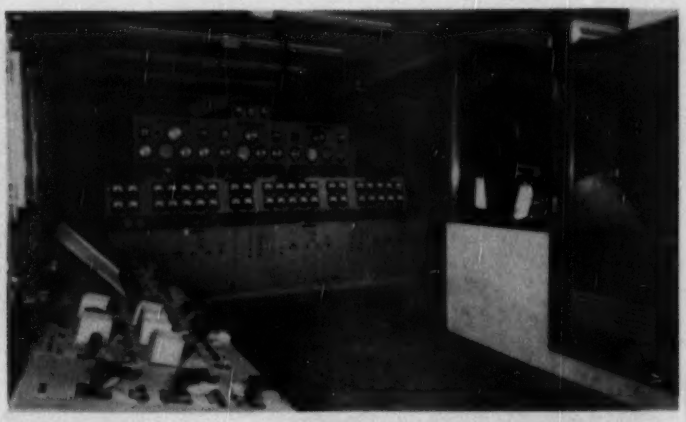


First of three 100,000-kw. turbogenerators at Moss Landing. Machines operate at 3,600 r.p.m. Throttle temperature is 950° and pressure is 1,330 psi. Fuel is oil or natural gas

First of three units at Moss Landing steam plant of Pacific Gas and Electric Co. on Monterey Bay went on the line April 20, adding another 100,000 kw. in generating capacity to that system. The second and third units of 100,000-kw. capacity each will come along, one late this year and the other early in 1951. Moss Landing will cost $51,500,000, and will be the largest plant on the PG and E system. It will bring total generation added by PG and E since the war to 862,500 kw. Completion of Moss Landing together with Contra Costa steam plant of the same size near Antioch by next summer are a part of the company's $800,000,000 postwar expansion program. New capacity then added in the first five postwar years will be 1,362,500 kw., the greatest expansion of any single electric utility in the nation.

Six 475,000-lb.-per-hour B & W boilers will supply the 3,600-r.p.m. turbo generators at Moss Landing with steam at 950° and 1,330 psi. Two of the units will be General Electric and the other two Westinghouse. Similar in design to the new Kern plant at Bakersfield and new station P in San Francisco, it is symmetrically laid out like the letter "H" around a centralized control room. Highly centralized control has been an important feature of design in all new

Six 475,000 lb./hr. boilers supplying steam



Centralized control is a labor-saving feature of all PG and E postwar steam stations

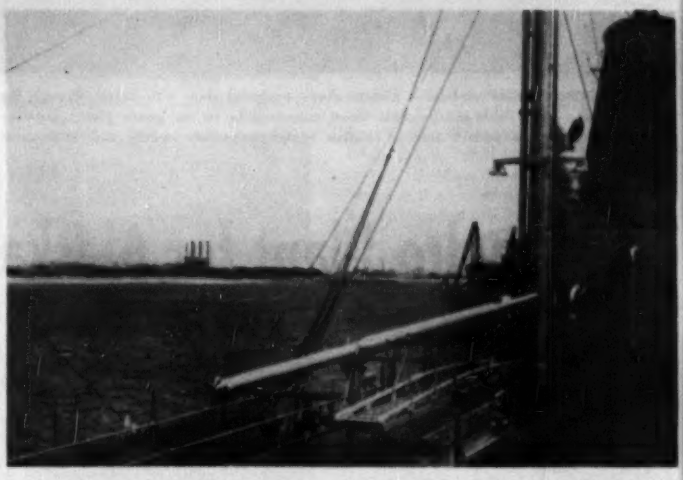
PG and E steam plants to reduce operating labor.

The boilers, two for each unit, can burn oil or natural gas and by adjustment could burn pulverized coal. At full capacity the plant will consume 13,500 bbl. of oil every 24 hours, requiring delivery of a tanker-load of 120,000 bbl. every nine days. Oil tankers tie up at an "underwater service station" in Monterey Bay 3,500 feet off shore and discharge their cargo into one of four 120,000-bbl. storage tanks at the plant through a sea hose connected to a pipeline on the ocean floor. It takes a tanker 15 hours to pump its cargo of fuel ashore.

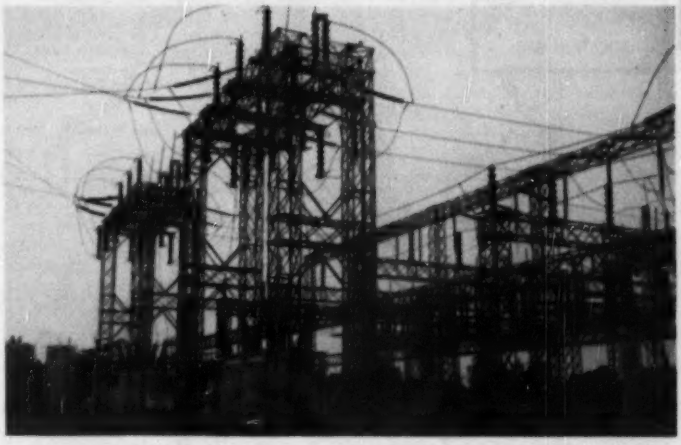
The 406,000,000 gal. of condenser cooling water required every 24 hours is taken by tunnel from Moss Landing harbor and discharged into a nearby slough to prevent recirculation of the warm water. Because of the great depth of Monterey Bay, the condenser cooling water runs 54°. At this favorable low temperature a substantial increase in kilowatt-hours per barrel of oil is obtained.

Generator voltage is stepped up to 110 and 220 kv. through transformers immediately adjacent to the plant for power transmission to load centers over four 110-kv. and three 220-kv. transmission lines. Switchgear on the 220 kv. is of the new RHE-type Pacific Electric 3,500,000-kva., 3-cycle breakers.

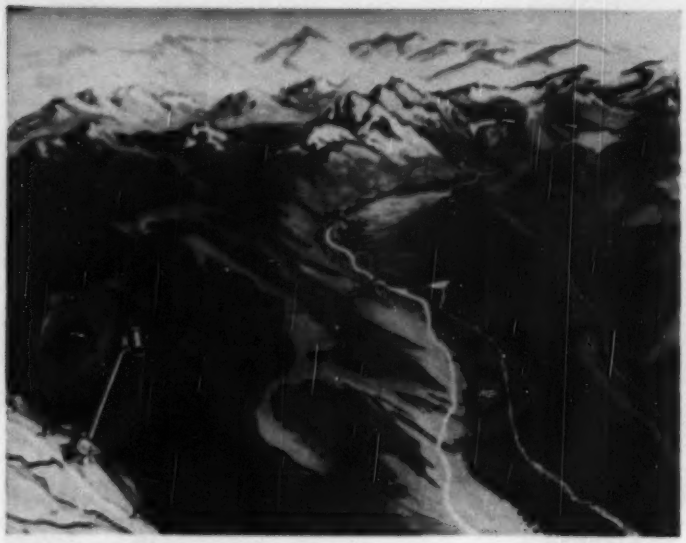
Moss Landing is a favorable steam plant site. It is designed for expansion to double the size of the initial plant, or 600,000 kw. when conditions warrant.



Tanker anchors at underwater service station to discharge cargo of 120,000 bbl. of fuel oil

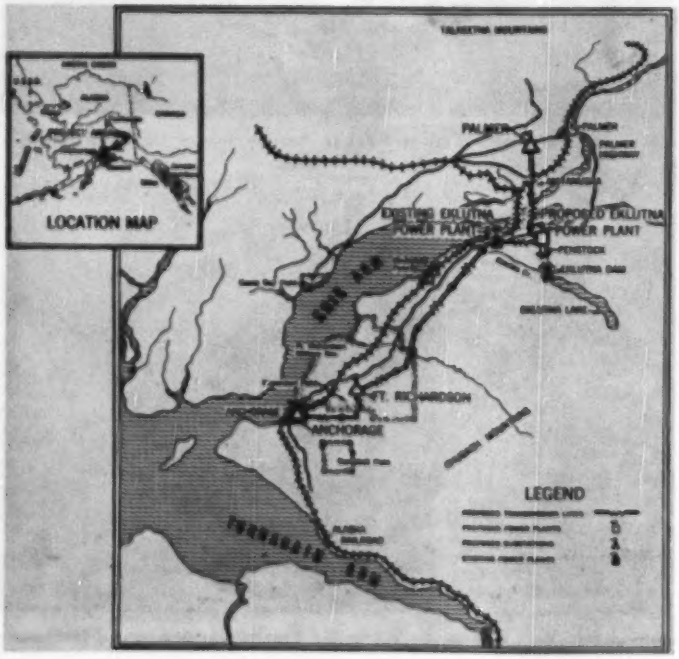


Part of 230-kv. switchrack showing two of the 3,500,000-kva. three-cycle circuit breakers



ARTIST'S CONCEPTION of Eklutna project shows proposed dam with tunnel through the mountain to a surge tank and penstock down mountainside to the power plant. Location maps below show the project area in relation to the immediate vicinity and entire area

New Hydro Plant for Alaska



Alaska will have its first large-scale hydroelectric development under recent legislation authorizing a $20,365,400 power plant at Lake Eklutna, near Anchorage, Alaska. The plant, to be built by the Department of Interior, will provide power for military installations and commercial and residential consumers in the Anchorage area. The department will be required to give preference in sale of power to municipalities, cooperatives and government agencies, under legislative terms.

The site is halfway between rapidly growing Anchorage and the Matanuska Valley, the territory's most productive agricultural region. More than 800 ft. above sea level, Eklutna Lake is a natural reservoir, seven miles long and one mile wide, with a maximum depth of 200 ft. Plans call for boring a tunnel through the mountain, installing a penstock with a surge tank down the mountain side and building a power plant of 30,000-kw. capacity near tidewater level. Transmission lines would be strung on wood poles to Anchorage and to within four miles of Palmer in the Matanuska Valley.

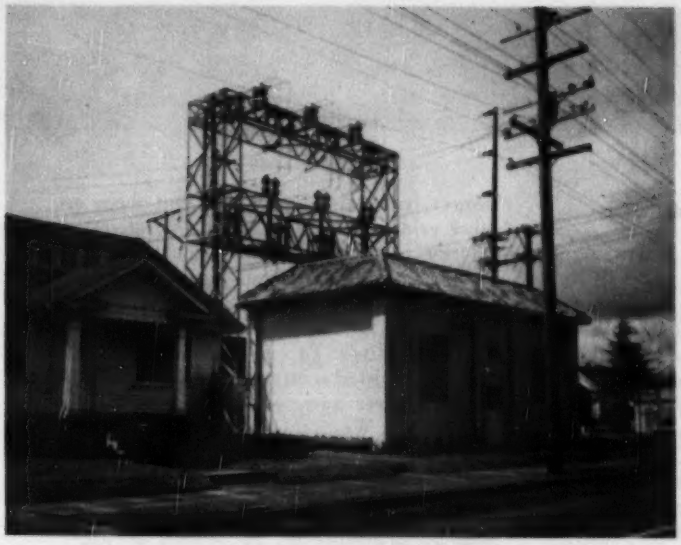
Anchorage has an electrical distribution system designed to serve a population of 3,500 people. The same facilities now are trying to take care of 20,000 while more than 3,000 people just outside the city limits are without electric service for their newly constructed homes. In the city, the demand is so great that circuit breakers are alternately opened on various sections of the city's power system, thereby darkening other sections.

The Anchorage Power & Light Co. built a 1,000-kw. plant at Eklutna in 1927, added a second 1,000-kw. unit in 1936 and a 700-kw. diesel-driven unit before the war. The city took the company over in 1943 and is operating it as the Anchorage Public Utilities.

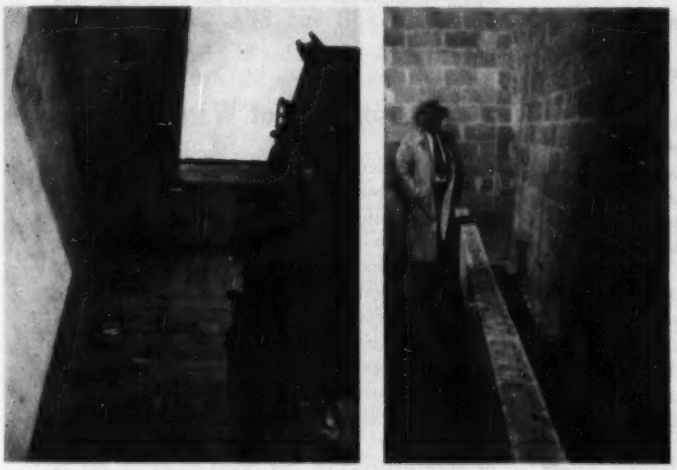
In an effort to meet power demands, the city purchased the stern half of a wrecked ocean-going tanker on the waterfront and has been utilizing its boilers and generating equipment as a power plant since 1947. This has a capacity of 3,000 kw. Two additional 1,000-kw. diesel-driven generators since have been installed and a third purchased.

Since it is estimated that power capacity of the Eklutna project would be fully utilized in the second year following its completion and since most Alaska communities are short of power, studies now are under way to develop the water resources of the Kenai Peninsula, Matanuska, Susitna and Nenana Rivers.

With such further development in mind, the Eklutna project would have a transmission line constructed for ultimate operation at 161,000 volts.



Hollow sand-filled pumice block enclosure eliminates objectionable noise from unit sub



Ceiling wood blocks (left) will hold fiber-glass panels. Baffle wall is shown at right

Pumice Blocks Reduce Unit Sub Noise

Objectionable noise from a unit substation has been eliminated by the Pacific Power & Light Co. by the specially constructed building shown. The problem arose when the company located a 15,000/25,000-kva., 110/66-11-kv. unit-type substation in a residential district of Portland. Although the plot measured 70x95 ft., one house was only 27 ft. from the transformer. Residents of the area immediately complained of hum. Tests indicated an average sound level of 71 db with a maximum of 81.5 db. Although the sound level was within the NEMA standard of 75 db for this class of substation, nevertheless good public relations made it imperative that something be done.

Solution to the problem as worked out by Corbett McLean, chief electrical engineer, was a walled enclosure of sand-filled pumice blocks to serve as a barrier to the hum. Special baffle walls were built inside the structure at ventilation openings. The roof is a partial roof. It extends only as far as may be seen, the center being entirely open. Wood blocks were imbedded in the underside of the concrete roof section so that fiberglas soundproofing panels could be nailed on later if found necessary. The result was the pleasing structure shown whose modern lines, red tile roof and glass brick ornamentation make the building an attractive addition to the residential neighborhood.

McLean offers the following suggestions for installations that must be made in residential areas:

1. Continue to press the manufacturers for more uniform assembly with noise level an important feature in the design.

2. Procure enough property so that the transformers can be placed at least 100 ft. from the nearest dwelling.

3. Compare the additional cost of a more quiet transformer with the construction of a sound absorbing enclosure. There exists a 25% increase in price for designing transformers at 10 db below NEMA levels. A 20% decrease in noise level might therefore increase the transformer cost by 50%. Several enclosures could be built for this high premium. The almost universal consensus of those contacted appeared to be that this cost is unwarranted and that the best procedure is to energize the substation and then apply remedial measures if required. The extreme variation in sound levels of identical unit substations included under the same purchase order is a strong factor in this argument.

4. If an enclosure is economically advisable, select for its construction the available material that has the lowest sound transmission factor and at the same time the highest sound absorbing property. If possible, energize the transformer two weeks before construction is started in an effort to accustom the complainants to the noise and obtain a psychological advantage as well as actual noise reduction.

Some further observations come from C. E. Baugh, electrical distribution engineer of Pacific Gas and Electric Co.:

1. Units of the same design show a wide variation—as high as 12.5 db—in sound level.

2. Units with cold-rolled steel cores have an average sound level about 7.5 db higher than that of earlier units built to the same specifications.

3. If unit substations have an average sound level of 52 db or lower or if their operation does not result in a sound level higher than 36 db at points adjacent to nearby residences, the noise should not be objectionable.

ELECTRICAL WEST

Impartial Power Control

IF today's half-war becomes a full war and demands all-out mobilization, who will control the nation's electric power supply? For electric power along with everything else will go under strict government authority. Will control rest with an independent agency such as OWU, which did a fine job in World War II? Or will some existing agency such as the Department of Commerce, the FPC, the Interior Department or the National Security Planning Board do the job? Just which agency handles the controls is highly important to the nation's utilities because their immediate destinies will be at stake.

Reason for the concern of the power companies is understandable. The one agency whose hands itch most to grasp electric power controls is the Department of the Interior. Here in the Far West Interior, through USBR and BPA, is a vigorous and occasionally ruthless competitor to many power producing and distributing utilities. The advantages accruing from the authority to approve or disapprove all power expansion programs under such circumstances is obvious.

Recent events lend validity to the belief that regulation by the Interior Department might not be free from partiality or bias. One high official of the USBR visiting the West last month stated that the step-up in defense mobilization brought into sharp focus a power deficit in California that could only be corrected by importing additional electric energy from the Columbia River. At that very time Pacific Gas and Electric Co. was carrying the greatest peak in its history with 465,000 kw. of spare capacity. And in the Pacific Northwest the Utilities Conference Committee was reporting to NSRB that there was no hope that the region would be able to meet defense power commitments without serious curtailment of use by present customers. The power shortage in that area will continue until 1954 unless the federal government drastically speeds up both federal and non-federal projects, the committee said.

In this case the Korean emergency was being used as an excuse to foster the plan to interconnect the BPA and the Central Valley project transmission networks. But there are other evidences as well of the self-interest of Interior in power. Examples include the effort to impede non-federal power projects on the Cowlitz and Deschutes rivers and the battle by the USBR to take over development of the Kings River. To cap it all there are the still uncompleted contract negotiations between Interior power agencies and utilities located all over the West.

So the power producing and distributing utilities of the Far West, want no part of any all-out mobilization control by the Interior Department. The organization that does control electric power should be an independent body which could deal with all power groups, including USBR and BPA, impartially and without bias.

Censorship Not Warranted

IN the ridiculous war that sometimes develops between employers and employees during bargaining negotiations is to be found some of the same short-sighted demand for censorship that comes with nations at war. Its purpose is sometimes less to conceal from the "enemy" information of value to him than a screen to conceal some of the shortcomings of the leaders or their actions.

It is the same in industrial strife. When one side browbeats or intimidates the other into submission to an "agreement" that is unsound or even destructive, the press is urged not to play up that feature of it, "merely report the facts." The victor does not wish these unhealthy angles explored because the criticism reproves him for his methods or his greed. The vanquished is ashamed of himself for the "bargain" he has bought with his self respect. And he wants peace restored so that he can try to recover from his loss somehow.

But what both parties to bargaining forget is that they are not alone. They are both parts of an industry which is affected by what they do, yet seldom has a voice in the negotiations. For example an agreement between contractors and union affects the sale of merchandise and its installation and hence hurts manufacturers, wholesalers, dealers, consulting engineers, in-

EDITORIAL VIEWS

spectors and utilities. But none of these enters into the negotiations at all.

The ultimate consumer is also affected, and most vitally. Yet he is completely forgotten or merely considered as the sucker who will pay the bill anyway. But his pocketbook has an elastic limit and beyond that he ceases to pay or he uses substitutes that detour the entire industry.

The small operator too is forgotten in these "bargains" that are no bargain. It is he who cannot survive if the public deserts him. He is the first to be done without.

Not to present the consequences of such agreements to the industry and the public, in our estimation, is to default the responsibility of journalism. A free press owes it to its industry and public. If a deal will not stand the light of day, it should never have been made.

Freedom of criticism is the sole control in a system of freedom. Without freedom to criticize and arouse public opinion to stop the unsound and the selfish, there can be no safety in freedom. The alternative is to control everything, including bargaining, as is done in the "democracies" behind the iron curtain.

How much brighter the Aluminum Workers Union has shown itself. Its business manager initiated a promotion program in which 800 of Reynolds Metals employees called on 40,000 homes to leave samples and explain the uses of foil because "our philosophy is that the bigger, better and more successful the company is, the more job security we will have."

No Free Ride, Please

IF Congress is going to pass new tax bills to extract revenue to pay for war and defense, let it be brave enough to face the socialistic pressure groups and demand fair taxes from the tax-exempt cooperatives and the educational and charitable institutions which run businesses on the side. These tax-exempts should have paid some billion dollars in taxes during the last war, but didn't. In fact, while all other business was heavily taxed, these groups earned such profits that since the war they have expanded enormously with the capital that they have accumulated at everyone's else expense.

Any decent American is willing to pay his share of the increased costs put on his country by the Kremlin's undeclared war, but he certainly does not want to see socialistic competitors favored above him. The war is one to try to preserve a system of freedom to enterprise. To countenance an internal subsidized system of the kind that our enemy wishes to impose on us eventually is to undermine the fighting spirit of all who must pay the bill in lives or earnings. Let there be no more compromise with creeping communism, whether it is in the Russian brand or a home-grown breed.

AND life is infinitely less important than freedom. A free man has a value to himself and perhaps to his time; a ward of the state is useless to himself—useful only as so many foot-pounds of energy serving those who manage to set themselves above him. A people which has lost its freedom might better be dead, for it has no importance in the scheme of things, except as an evil power behind a dictator. In our hearts we all despise the man who wishes the state to take care of him, who would not rather live meagerly as he pleases than suffer a fat and regimented existence. Those who are not willing to sacrifice their lives for their liberty have never been worth saving. Throughout remembered time every self-respecting man has been willing to defend his liberty with his life. If our country goes totalitarian out of a soft-headed humanitarian impulse to make life easy for the many, we shall get what we vote for and what we deserve, for the choice is still before us, but we shall have betrayed the race of men, and among them the very have-nots whom we subsidize. Our Western continent still has the opportunity to resist the government-led rush of barbarism which is taking Europe back toward Attila, but we can only do it by running our government, and refusing to let it run us.—Maxwell Anderson, author and playright.

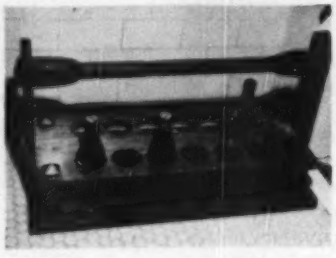
Directors Room Remade by Los Angeles NECA

Now the dining room can be used for more office space at Los Angeles Chapter, National Electrical Contractors Assn., for a new board room recently was made out of two upstairs former bedrooms of the ancient mansion that the chapter owns as its office building at 124 W. 24th St., Los Angeles. The board room has dignity and comfort—dignity in furnishings and paneling, and comfortable lighting from fluorescent units and ventilation.

Out of wood taken from the 50-year-old house during the remodeling, A. L. Stone, chapter treasurer, who is a home workshop fan, made a rack in which to bring in and serve cokes to the directors during a meeting. Handsomely polished, the rack holds 12 bottles. It was made without nails or screws. The chapter has a full electric kitchen on the main floor from which meals are sometimes served to an evening meeting of directors or committees.

The Los Angeles Chapter is host to the big NECA national convention, Oct. 17-19, at the Biltmore, Los Angeles. Stone, who managed arrangements so well for the 1938 convention, heads a committee of other veterans, R. F. Doll, R. E. Arbogast, R. Max Fry, Herb Evans and Sid Hill, chapter president.

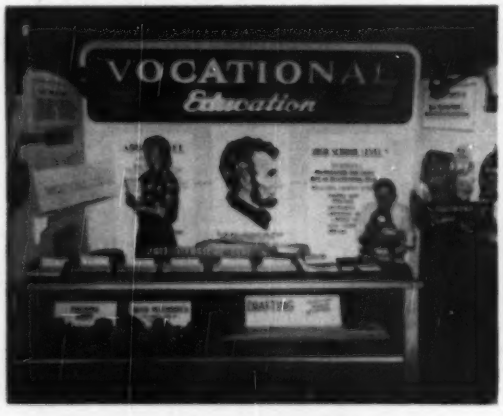
DIRECTORS of Los Angeles Chapter meeting in the recently installed new directors room —A. L. Stone, treasurer, C. D. Draucker, R. E. Arbogast, Miss Schmoldt, secretary, Sid Hill, president, Warren Penn, manager, Herb Evans, governor, and Harry Van Cott, director

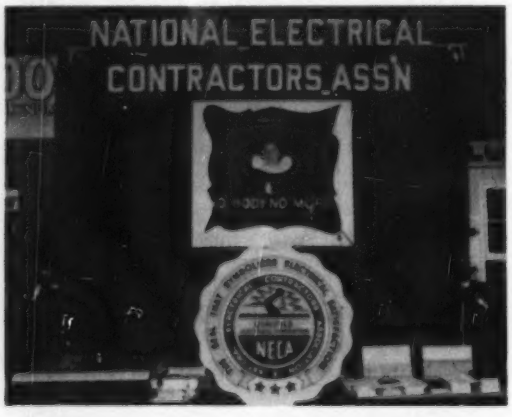


Fashioned by A. L. Stone out of stair rail and lumber removed in remodeling the old homestead for the directors room was this beverage rack for the pause that refreshes

Leagues

E. C. Berick, Hale Bros., succeeded Allan MacLennan as president of the Sacramento Electrical League, following the annual election of officers recently. Others elected were John L. Nicolay, Dalco Appliance Co., vice-president; G. L. Cane, Utility District, secretary, and as directors, Edwin M. Ames, General Electric Supply Co.; Lester Woldit, Sacramento city electrician; A. W. Williford, Williford's Kitchen Shop; R. L. Dunshee, Utility District; A. A. Nerling, Graybar Electric Co., and Pete Ellwood, Wood Products Co.





NECA Chapters Promote Business and Prestige at Home Shows

AT COLORADO SPRINGS "Show of Progress" the Rocky Mountain Chapter, NECA, sponsored this vocational education booth, tying in with its apprenticeship training program. One newspaper devoted a full page story to it, others likewise played it up strongly

LOS ANGELES "Home Show" had this bodyless woman answering questions about adequate wiring in the booth of Los Angeles Chapter, NECA, which is one of the stockholder sponsors of the annual construction industries affair at Pan Pacific Auditorium

Star Studded Program for RMEL Meeting

An all-star cast of speakers is scheduled for the Rocky Mountain Electrical League annual convention, which will be held at Broadmoor Hotel, Colorado Springs, Oct. 8-11, according to W. D. Johnson, Mountain States Power Co., Casper, president and Ralph Hubbard, manager. Among the speakers will be Louis V. Sutton, newly elected president of Edison Electric Institute and president of Carolina Light & Power Co.; James Parker, president of Detroit Edison Co. and chairman of the utilities information committee; Henry B. Sargent, president, Central Arizona Light & Power Co., Phoenix; T. E. Roach, president, Idaho Power Co., Boise; Robert S. Peare, vice-president in charge of public relations, General Electric Co., New York; E. R. Cornish, Western regional director, National Electrical Contractors Assn., San Francisco; C. Webb Thelene, sales manager, Merchandise Dept., General Electric Co., Bridgeport; K. W. Haagensen, public relations director, Allis-Chalmers Co., Milwaukee, Wis.; Arthur Prager, president, Public Service Co. of New Mexico; B. K. Wickstrum, general sales manager, lighting division, Sylvania Electric Products Inc., New York.

Alston Rogers, General Electric Co., Lamp Dept., Nela Park, will demonstrate the new lighting equipment and give a presentation of the "progress report" that he delivered to the Illuminating Engineering Society convention in Pasadena. There will also be a prominent speaker from Westinghouse Electric Corp., not yet decided upon. Tom Collins of Kansas City will be the entertaining speaker booked for the banquet on Tuesday evening. Dr. J. L. Zwingle, president of Park College, Kansas, will be the featured Monday noon speaker.

Among the entertainment events is an ice show scheduled for the Monday evening of the convention.

WARM were the greetings and the day when the Northern California and Sacramento Valley chapters of IAEI met at Sacramento city hall. The chair was shared by officers B. F. Weisinger, chairman (left), and Ken Bliss, secretary (right), of Northern California, and C. E. Jervis, secretary, and L. E. Woldit, chairman, Sacramento Valley chapters

IAEI

James Vernon, an Oregon State Inspector in Portland, recently succeeded O. T. Fugitt of the Portland City Electrical Department as chairman of the Oregon Chapter, International Association of Electrical Inspectors. At the same time Reid S. Connell, a Portland inspector, was elected vice-chairman, and Paul L. Miller, same department, re-elected secretary-treasurer. On the executive committee H. E. Hefling, Portland General Electric Co., and Mel Otness, Boones Electric Service, Lake Grove, Ore., were named.

Electrical Inspectors Assn. of British Columbia recently elected Lance Robson, inspector of electrical energy for the Province of British Columbia, as its president; with L. Ryan, assistant to the city electrician, Vancouver, as vice-president, and J. Walker, Provincial Electrical Dept., as treasurer. Richard Hall, Electric Service League, was re-elected secretary.

Southern California Chapter, International Association of Electrical Inspectors, met recently at the Square D Co. in Los Angeles to hear a code discussion and demonstration of the operation of circuit breakers. Charles Croft and Walter Rueland, both of Square D, were the speakers . . . Has scheduled its next section meeting at San Jose, Sept. 18.

Exposition

All-Electrical Exposition, sponsored by the Electric League of Los Angeles Inc., will be held at the Pan-Pacific auditorium, Los Angeles, Oct. 20-29.

Regional Conventions

Two regional conventions are slated at Portland during September. Regional 9 meeting of the National Rural Electric Cooperative Assn. meets Sept. 11-12. Northwest Public Power Assn. holds its semi-annual convention Sept. 13-15.

EMEA

Ed Price of Mare Island Public Works Department was elected president of the Electrical Maintenance Engineers Assn. of Northern California at its recent annual meeting, succeeding Herman Dudak, Smith Electric Co., San Francisco. First vice-president elected was Eugene Wilson, San Francisco Naval Shipyard; second vice-president, Lincoln Meany, Macy's television department, San Francisco and secretary-treasurer, Stan Nystrom, Mare Island Electrical Shop.

B. C.

International Association of Electrical Leagues has scheduled its 15th annual conference at the Copley Plaza Hotel in Boston, Oct. 11-14. A program committee including V. W. Hartley, Los Angeles, and R. B. Hubbard, Denver, held a meeting in Chicago recently to draft the program.

Southern Interior Electrical Assn. was organized recently at Penticton, B. C. P. G. Cooper is its president and H. Myers secretary-treasurer. Executive officers are J. M. Smith, G. A. Hannah and G. Graham. Other associations are being organized at Vernon and Kamloops in Interior B. C. R. Hall, secretary-manager of the Electrical Service League of British Columbia undertook the organization work.

PANORAMA OF THE PCEA

Edited by A. X. Schilling

New Plan for Fall Conference

A new plan for the annual Fall Conference will be inaugurated this fall when the three sections meet individually at different times and places.

The Operating Economics Section will meet in San Francisco on Nov. 2, the Business Development Section will meet in Fresno on Nov. 9, and the Administrative Services Section will meet in a joint PCEA-Pacific Coast Gas Assn. conference in Los Angeles on Nov. 16.

The new schedule is the plan worked out by the committee appointed by the board of directors to make the fall conference more effective. PCEA's continued growth has made it increasingly difficult to stage the conference at a location convenient for all; the new plan will eliminate that problem and, by rotating the locations of the various section conferences, the plan will make the meetings convenient to a larger number of interested persons. During the course of three years, each section will stage a conference in each of the three cities mentioned.

The fact that the problems to be discussed by the Administrative Services Section are in many cases identical to those faced by members of the Pacific Coast Gas Assn., and because such problems often are handled by the same individuals in combination utilities, it has been decided that this year's section conference should be a joint PCEA-PCGA venture. The complete guidance committee will not be appointed until plans for the joint meeting are farther advanced. However, E. J. Wright, San Diego Gas & Electric Co., will serve as chairman, and Dexter Stoner, Coast Counties Gas and Electric Co., will serve as vice-chairman.

The Business Development Section guidance committee is composed of: R. I. Mendes, PG and E, chairman; H. C. Rice, Southern California Edison Co., vice-chairman; J. S. C. Ross, PG and E; J. H. Adams, Southern California Edison Co.; Wilkes Lambert, California Electric Power Co.; E. R. Gray, California Electric Power Co.; W. F. Chapman, San Diego Gas & Electric Co.; F. M. Raymond, San Diego Gas & Electric Co.; Louis Wollenberger, Coast Counties Gas & Electric Co.; Frank M. Falge, General Electric Lamp Dept.; J. A. Corlett, General Electric Co.; C. V. Roseberry, Westinghouse Electric Corp.; W. H. Thompson, Westinghouse Electric Corp.; S. W. Scott, Graybar Electric Co. Inc.; H. G. Atwater, Leo J. Meyberg Co.; J. A. Warren Jr., Nash-Kelvinator Corp., and E. R. Cornish, National Electrical Contractors Assn.

The Operating Economics Section guidance committee is composed of: A. A. Straub, Southern California Edison Co., chairman; Alf Hansen, General Electric Co., vice-chairman; F. S. Benson, PG and E; C. C. Blecksmith, Duncan Electric Mfg. Co.; H. S. Christensen, Southern California Edison Co.; P. H. Adams, San Diego Gas & Electric Co.; Charles Morris, Earl S. Condon Co.; R. A. Young, Kerite Co.; Charles Gerckens, Cole Electric Co.; Robert Milmoe, Bechtel Corp.; J. M. Keith, California Electric Power Co.; E. C. Hunt, PG and E; J. A. Longley, Allis-Chalmers Mfg. Co.; D. R. Ritchie, Pacific Electric Mfg. Co.; W. A. Howe, Westinghouse Electric Corp.; R. D. Spear, Foster-Wheeler Corp., and G. E. Bishop, Coast Counties Gas & Electric Co.

The following appointments have also been made:

Adequate wiring committee: J. H. Adams, Southern California Edison Co., chairman; Matt Sherwood, National Electrical Contractors Assn., vice-chairman.

Air heating committee: O. R. Doerr, PG and E, chairman. Technical subcommittee: H. H. Douglas, Southern California Edison Co., chairman.

Advertising and publicity committee: F. M. Raymond, San Diego Gas & Electric Co., chairman.

Agricultural electrification committee: C. V. Roseberry, Westinghouse Electric Corp., chairman; S. H. Winter, General Electric Co., vice-chairman. 4-H Club electricity project subcommittee: E. G. Stahl, PG and E, chairman. Agricultural load-building subcommittee: S. H. Winter, General Electric Co., chairman. Agricultural Handbook Revision subcommittee: T. W. Christensen, PG and E, chairman.

Budget and finance committee: Harold Quintin, Southern California Edison Co., chairman.

Code and ordinance committee: L. M. Guibara, U. S. Rubber Co., chairman; A. C. Miller, PG and E, vice-chairman.

Commercial and industrial lighting committee: Frank M. Falge, General Electric Lamp Dept., chairman; C. R. Long, Westinghouse Electric Corp., vice-chairman. School Lighting subcommittee: H. H. Robison, PG and E, chairman. Fluorescent lighting maintenance discussion group: Benn Hartmann, Flood-Lite Service, sponsor.

Communications committee: P. H. Adams, San Diego Gas & Electric Co., chairman.

Electrical living committee: S. W. Scott, Graybar Electric Co. Inc., chairman; W. S. Thompson, Westinghouse Electric Corp., vice-chairman. Television subcommittee: J. Clark Chamberlain, San Diego Bureau of Radio and Electrical Appliances, chairman; A. C. Miller, PG and E, vice-chairman. Home economics subcommittee: Lois Ferris, Westinghouse Electric Corp., chairman; Pauline Eliker, Southern California Edison Co., vice-chairman. Kitchen and laundry subcommittee: E. W. Meise, San Diego Gas & Electric Co., chairman. Home lighting subcommittee: M. H. Jankelson, Incandescent Supply Corp., chairman.

Highway lighting committee: H. F. Hartzell, Maydwell & Hartzell Inc., chairman. Technical subcommittee: G. S. Kimball, San Diego Gas & Electric Co., chairman.

Industrial power, heating and welding discussion group: T. L. Van Law, Southern California Edison Co., sponsor.

L. P. gas committee: Wilkes Lambert, California Electric Power Co., chairman; Wayne Matthew, Coast Counties Gas & Electric Co., vice-chairman.

Membership committee: H. A. Lee, PG and E, chairman; George R. Best, General Electric Co., vice-chairman.

Nominating committee: R. W. Turnbull, General Electric Co., chairman.

Resolution committee: G. C. Tenney, McGraw-Hill Co. of California, chairman.

Safety committee: E. C. Hunt, PG and E, chairman.

San Francisco Market In Retrospect

It was a peculiar market, the summer market just conducted, Aug. 6-10, at Western Merchandise Mart, San Francisco, its 35th anniversary, too. The buying rush at outbreak of war had begun to subside. There was none of the wild scramble to get anything that was made that characterized the 1945 market. Though attendance, according to George L'Amoreaux, Mart promotion manager, was about 10,000, equal to last summer market, it was neither a buyers' nor a sellers' market, but a proprietors'. The owners of businesses came to try to fathom what might lie ahead.

Since considerable coverage of new things shown was given in last month's *Sales Guide News Letter*, only a few more of the pictures taken are shown here. Instead second thought is given to some of the views spoken at the usual Wednesday evening Appliance and Radio Trade dinner. The talks were short but pertinent. One speaker was young John Hurley, president of Thor Corp. In lieu of a national figure, plain-spoken Al Meyer, president of distributor Leo J. Meyberg Co., San Francisco, was the TV speaker. And merchandising-wise William Buchanan, Western regional manager of Frigidaire, chairman of the evening, buttoned up the serious talks with some pertinent advice of his own.

Hurley contrasted the situation at the beginning of the last war—with industry running below capacity—to the present, where industry has been going full steam and has no extra plant capacity, manpower or materials to turn to war production. Hence the extent of war preparation marks a corresponding decrease in production of civilian goods.

His advice to dealers was not to take down payments on merchandise in advance unless the money is put in escrow. Secondly he advised not carrying more lines than they could learn thoroughly and sell well. Manufacturers and distributors would do well not to put on too many dealers. His own company's selective dealer plan, he said, had proved very wise for all. As a final bit of advice he urged rediscovering that they *could* sell ironers if they tried, and ironers take less steel but return more dollars per pound.

Al Meyer, after putting into one big capsule the astounding growth figures for television in the West, despite all the negative roadblocks predicted for it, gave his hard-boiled views of the future. He urged a modest approach to the tremendous opportunity TV affords. The current buying spree, he gave his opinion, might increase prices. There may be shortages and hardships and these

PICTURED during Market Week, reading from top of the page. TUNING a range by color is shown to Andy Masser, Thompson Electric, Walnut Creek, by Lois Ferris of Westinghouse Corp. THOMSON-DIGGS showed the West its first glimpse of the new Murray line of matched steel kitchens, gas and electric ranges. NICK SIPOREN, who runs a chain of State Home Improvement Co. stores, is told about the Tele-tone TV sets by Claude Davies. FRIGIDAIRE's range that exposes its innermost secrets in an automatic mechanical sequence is admired by William Buchanan and W. H. Baldwin of Frigidaire and Lee Shirar of Shirar Young Co. JOHN HURLEY, president of Thor; William Buchanan, Frigidaire Western regional manager, toastmaster; and Al Meyer, president, Leo J. Meberg Co. were the Appliance Dinner's only speakers

may precipitate government controls. He said he was not one who believed war production would stop civilian production for the country had more facilities, stand-by plants, and it was a vastly different picture than existed at time of Pearl Harbor.

"But keep a watchful eye on Washington," he cautioned. "Don't submit blindly to all that the little boys down there dream up to spend our tax money."

Cutbacks, he felt, would not go as far as 50%; probably 20% at most, which might be a good thing. "It might sober us up a bit on production. We were going a little wild." The U. S. might be an armed camp for a couple of decades. Taxes will increase. "We may never see the good old days again. To my thinking there are two things wrong with this country—taxes and people."

Buchanan closed with the thought that, despite the world situation, dealers attending the market had not found displays stripped or lacking salesmen to meet them and urged the retention of the men trained as salesmen in order to assure the public of good service and good salesmanship. "We are still in business. You are still getting goods," he reminded all.

Drive-in Pay Window

Paying electric bills at a handy drive-in pay window at Sacramento Municipal Utility District has gained the full acceptance of more than 32,500 customers. The Sacramento District is the only electric utility on the West Coast using this modern method.

Each month more people are taking advantage of the utility's unique and easy way to pay bills, district officials report. Besides being convenient for the customers, the window helps to eliminate the traffic and parking problems at the busy utility location.

Joe's Showmobile

The automobile that took trade away from rural to metropolitan areas is doing a turn-about job on electrical appliances for Joe Owens Appliance Sales, 13440 First Ave. S., Seattle. Live displays taken to customers' homes in a showmobile not only have enabled him to hold his own with competition but have increased his sales volume.

Weather might keep customers from the store but nothing keeps the showmobile from going to the customers. After leasing a vehicle for a trial performance for two weeks in February when weather was bad, he later got a vehicle measuring 9x28 ft. in which his salesmen and customers could stand upright. Calling on rural customers, parking is no problem. For an investment of $4,200 plus some personal work taking the seats out and fitting up the "showroom" in it, and with a 150-ft. extension cord, he has a showmobile that is popular with rural folks.

To give it a send-off, he addressed 250 cards to families in a selected area, saying Joe Owens' crew would personally call in the neighborhood on specific dates. Local newspaper and radio ads said the same. He found women waiting for it. With the showmobile was developed a system of getting visitors to sign, to tell what kind of appliances they were using, etc. This goes into a clip-board for future follow-up. The bus also makes night calls and gives demonstrations of washers for husbands' approval. Owens has had such success he is considering a second unit. The show and sales must go on!

A twin-coach is a shop on wheels for Owens

Echoes from the Casper, Wyo. Home Show That Was Such a Success

IN CASPER it was radio station KVOC that sponsored the Home Show early this year in the Armory across the street from the station, and some 4,500 adults plus unnumbered children visited the three-day show. Admission, though free, was by ticket given out by exhibitors at their downtown stores, Berlat's, Kirby Vacuum Store, Metcalf's Coast to Coast Store, Mountain States Appliance Co., Radio Supply Co., Christensen Electric, Schulte Hardware, Union Electric, Huber Radio, Forster Electric Co. and Mountain States Power Co. furnished the lighting. The Casper Tribune-Herald ran a special section for the show in addition to daily news stories

ELECTRICAL WEST

Sales Guide

News Letter

FOR THE ELECTRICAL MERCHANT OF THE WEST

September 1950

While waiting for world conditions to blow up or jell make hay by continuing to sell. After all that's the most constructive job to be done. Carry on! That's what the leaders in the industry are doing. For instance—

Big top

Electrical Wonderland Exposition in San Francisco, Sept. 21 to Oct. 1 is sold solid and the whole industry is in it—appliances, lighting, wiring supplies, contractors, union, wholesale distributors, dealers and manufacturers. They've even got Thomas A. Edison in it, through a remarkable collection of his inventions, loaned by Hard Harris and the Dearborn collection. It will celebrate completion of the Pacific Tel. and Tel. radio-relay TV link between Los Angeles and San Francisco. Broadcasters are in it with shows and promotion.

It's a date

Intermountain Electrical Assn. plans its annual fall convention at Hotel Utah, Salt Lake City, Oct. 20-21—strictly a sales promotion affair, with a TV banquet at one of the studios.

L. A. too

Edgar Bergen and Charlie McCarthy are booked as headline attractions for the All-Electrical Exposition and Food Show, staged by the Los Angeles Electrical League, at Pan Pacific Auditorium, Oct. 20-29. Another promotion event will be the Town Meeting of TV and Radio Dealers, at Shrine Auditorium, Sept. 19.

Scouting

Both attendance and buying were good at the Western Housewares Show at Los Angeles Biltmore, Aug. 27-30. Although few of the top electric housewares makers showed, the second lines who did fared well. Buyers came with order pads instead of the bored look.

Extended

Montana Power is extending its rural sales campaign, which pays dealers for sales to honest-to-gosh farmers, for another three months. The thing is gaining momentum each month. Ranges, water heaters, dryers, freezers and water systems sold to farm customers bring salesmen a bonus.

The answer

Most sensible, practical and simple approach to the home lighting market is about to be sprung by General Electric Lamp Department with a system of easy recipes, with available and common equipment, giving the little woman tape measure rules she can understand. Watch Better Homes & Gardens for November.

Piped down

California's Contractors State License Board turned the plumbers down on a request to define anyone who makes a "solid connection" to water pipes as a plumbing contractor and required to be licensed. That would have hurt dishwashers, automatic washers saleswise.

A giant "Football Rally" attended by 800 salesmen and dealers was held at the Mart Club, San Francisco, Aug. 25, to launch the unique Gridiron Club which is selling season tickets to California and Stanford home games as a means of guaranteeing a gate for the games that are televised. Bill Lee, president of No. Calif. Elect. Bureau, Les Hoffman, president of Hoffman Radio, Al Meyer, Leo J. Meyberg Co., and Barnie Kearney, manager of the Gridiron Club, as well as football coaches, co-eds, pennants and yell leaders, even hot dogs, made the rally a winner. A contest is on for salesmen selling most tickets. — TV and football

Telechron Caravan, led by A. F. Fisher, Telechron president and cowboy bedecked Russel T. Woodward, manager of marketing, M. J. Dunn, sales promotion manager and Joe Burns, Western manager, put on a show for distributors in Los Angeles, San Francisco, Seattle, Denver and Dallas. Seven new models in a line of 22, arranged in groups—kitchen, alarm, decorative; a comic book to train the sales help; ample margins, and a market for a clock in every room in the house to "swing from spring," opens the fall sales program. — Time by forelock

The many who met kindly V. E. Dunn, president of Appliance Mfg. Co., Alliance, Ohio, when he was West for the market weeks will be sad to learn he died of virus infection shortly after his return from the Western tour. — Loss

Price increases from 5-10% are noted from several manufacturers, including Cory on one model coffee brewer; Thor on its clothes and dishwashers; Admiral on TV; Raytheon on TV; Majestic on both radio and TV. — Prices go up

Clinton E. Ring, formerly with General Electric in San Francisco as product field representative and service supervisor, is the new manager of product quality for G-E's appliance and merchandise department at Bridgeport. — Changes jobs

Hoover is making a new upright model vacuum cleaner to sell at $87.95 (cleaning tools $19.95 extra). Designed with wide front wheel, narrow rear wheel system, two-position, foot-operated range shifter. — Cleaner

Don Williams, well-known southern California TV and radio executive, has become general manager of Richmond Television Corp., makers of Natalie Kalmus TV sets. — Named

General Electric is expanding its electric sink and cabinet division activities to help cities interested in making city-wide installations of garbage disposers. Inquiries regarding such plans in the West should be made through John H. Engstrom, San Francisco representative. — Disposer plan

Scott-Radio Laboratories is making a new radio-phonograph with international short-wave band, replacing the FM band featured in all other Scott combos. — Short wave

James Butler, Schick sales representative in Seattle, was one of the winners in the company's sales presentation contest, a part of Schick's national sales meeting last month. — Lucky winner

Broili-Parks Co., Sacramento, is a new distributor for Thor in the Sacramento Valley and western Nevada. — Distributes

Marvin Sheldon was recently added to the staff of Dalco Appliance Co., San Francisco. He will handle Philco radio and TV sales in Oakland and Alameda. — Appointed

Major league pro football for TV fans in southern California is a sure thing now—Admiral, KNBH and the L. A. Rams have signed a $656,900 agreement for televising the entire national league schedule of the Rams. Three-way contract guarantees the Rams a total gate of $375,000. Admiral, the sponsor, participates in the guarantee to a maximum of $151,000; KNBH assumes the rest of the guarantee. Rams also have a guarantee of their own to Admiral and the network—that the total gate will not fall below $273,000. Anything below this wouldn't be charged to either Admiral or KNBH. They took a beating on a couple of games. — Three-way deal

Despite shortages in certain lines and models Northern California Electrical Bureau's electric range campaign during June topped an all-time high in sales for any month. Units sold totalled 2,420, a 45% gain over June '49. Success was due to the wholehearted support and cooperation of range dealers and suppliers, said John S. C. Ross, chairman of the executive committee of the Bureau. — Break the record

Mark W. Battersby, the new Pacific Northwest sales manager for Murray Corp. of America, will handle sales of Murray ranges, matched steel kitchens and bathroom fixtures in Washington, Oregon, Idaho and Utah. His offices will be in Seattle. — Northwest area

Patterned after its successful coffeemaker campaign in Orange County during June, Southern California Edison Co. is running a similar promotion in other parts of the Edison system during the rest of this year. Ads will run for two consecutive weeks in each district. — Push on coffeemakers

British Columbia reports the same wave of war-time panic buying that has been going on in this country, particularly on ranges, refrigerators and other major appliances. Started with a rush, has dropped off slightly during the past few weeks. . . San Diego reports that hysteria buying has fallen off sharply. Refrigerators and other white goods are still in greatest demand over TV and radio. — Slowing down

TV still climbing: San Francisco dealers sold 3,681 sets in July, a 55% increase over June, bringing total sales to 68,026. Shortages in larger tube sets plus increased demand is forcing a return to "priority lists". . . Los Angeles total for July was 46,224, boosting total set sales to 642,897. Now has about one set to each 2.4 families. — Sales up

Details of San Diego Bureau of Radio & Electrical Appliances Fall Conference, Sept. 8, will get full treatment in next month's Electrical West. As usual you can look for an evening packed with important speakers and subjects: Dan Packard, gen of Kelvinator, with the featured talk "Major Appliance Industry Outlook, As I See It;" Harry E. Calloway on "The Retailers Foster Father;" panel of seven discussing the production outlook; sales training and promotion plans of the Bureau; Anderson Northwick on "Keep Your Financial House in Order." — Packed program

The Bureau is going ahead with its 13th Electrical & Home Appliance Show, Nov. 24-29; reports that about 80% of the space has been allocated already. . . Will hold up the opening date of its planned washer-ironer-dryer campaign until inventories are more normal. . . Is staging a Television Town Meeting on Sept. 26. . . Just announced that it has changed its name to Bureau of Home Appliances of San Diego County. — Future plans

Century Distributing Co., Emerson distributor, has moved from 1345 Mission St. to 1111 Front St. in San Francisco. — New location

Youngstown's "jet tower" dishwasher got its San Francisco preview from distributor Pioneer Appliance Co. last month. Works on a "hydro-brush" action—64 spinning jets that propel streams of water against the dishes. Complete cycle takes 9 3/4 min. Promotion will be heavy. Both national and local ads, live display units, broadsides. Miniature "jet tower" dishwashers that actually operate will be used in distributor and dealer contests, also as home demonstrators. | Jet tower

Sacramento Municipal Utility District has expanded its home economics activities with the addition of Miss Carolyn Larson, recent home economist graduate from Oregon State College. She will work with Miss Anne York, the utility's other home economist, in providing advisory service and conducting weekly home economics classes in the District's model kitchen. | More home service

Spurred on by the success of last year's contest, San Diego Gas & Electric Co. is repeating its Buddy Kilowatt Lamp Bulb Contest, in cooperation with lamp bulb manufacturers and distributors. This year's goal has been upped to twenty million watts from 1949's fifteen million. Contest runs from Sept. 1-Oct. 27. | Repeat on lamps

Jim Oliver is the new sales manager for Mercury Television & Radio Corp., Los Angeles. | New on

Design Details for Electrical Living Homes is a new Westinghouse booklet with photographs, plan views, wiring diagrams, lighting schemes and an outline of the minimum requirements for complete electric service in the modern home. For utility use Westinghouse also offers a bulletin to be used in conjunction with the electrical planning booklet, describing promotional plans. Copies are available from Westinghouse, Box 2099, Pittsburgh 30 Pa. | Electric homes

Bendix recently announced a complete new line, including two tumble action washers, two agitator types, two dryers and an ironer. Is featuring the Dialamatic model which automatically washes clothes, drains itself and squeezes clothes damp dry. Suggested price is $169.95. | New line

Admiral Corp. recently received the Merit Award of the American Society of Industrial Engineers for leadership in research, engineering, design and manufacture in the radio and video fields. | Merit award

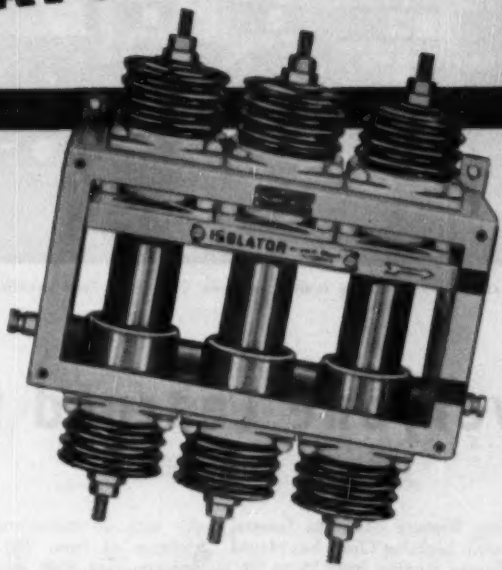
Walter Ostman is the new Philco division manager appointed to supervise the Western sales area. He'll have offices in San Francisco. Ostman replaces Cliff Rattinger, who held the job for 19 years. | Western sales

"Wonder What a Television Set Thinks About?"—an eight-page, comic-book style booklet, portrays the rights and wrongs of lighting the home for television viewing. Prepared by the television committee of Edison Electric Institute and available from them at 420 Lexington Ave., New York, in minimum lots of 100 for $2. | Lighting for TV

Specialty iron designed for ruffles, curtains, lace etc. was invented recently by Mrs. Bessie T. Stevens of San Francisco; is being made by Frank Meier Inc., Menlo Park, Calif. Iron clamps to any conventional board, has egg-shaped "head" which does the actual ironing; goods move over the iron. Retails at $19.95. | Special iron

Frigidaire has come out with a new line of restyled automatic electric water heaters with capacities ranging from 30 to 80 gal. | New line

THE ISOLATOR STORY

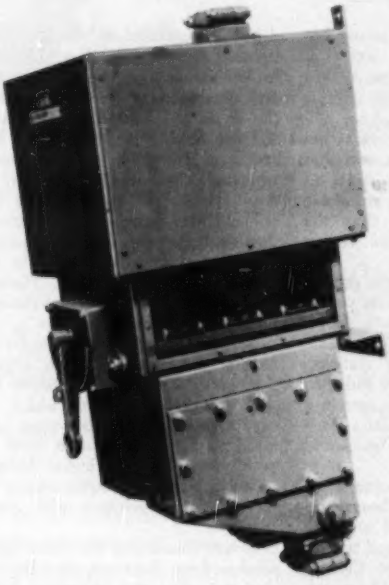


3 P.S.T. 400 ampere 7500 volt ISOLATOR with shaft extended on either side for attaching direct or remote control operating mechanism.

The ISOLATOR story is replete with many interesting facts. These facts show how Power and Industrial companies have saved SPACE, MATERIALS, and INSTALLATION LABOR, and also helped to PREVENT ACCIDENTS by use of this device.

The unique construction of the ISOLATOR, with its telescoping parts, accomplishes all these and still maintains all accepted engineering standards.

If you are seeking the Most Modern Method of disconnecting high voltage lines and circuits, especially in vaults, cubicles and other enclosures, investigate the ISOLATOR.



3 P.D.T. 600 ampere 5000 volt Cable ISOLATOR with upper connections in metal enclosure. Several of these assemblies were built to meet special requirements of a large industrial company.

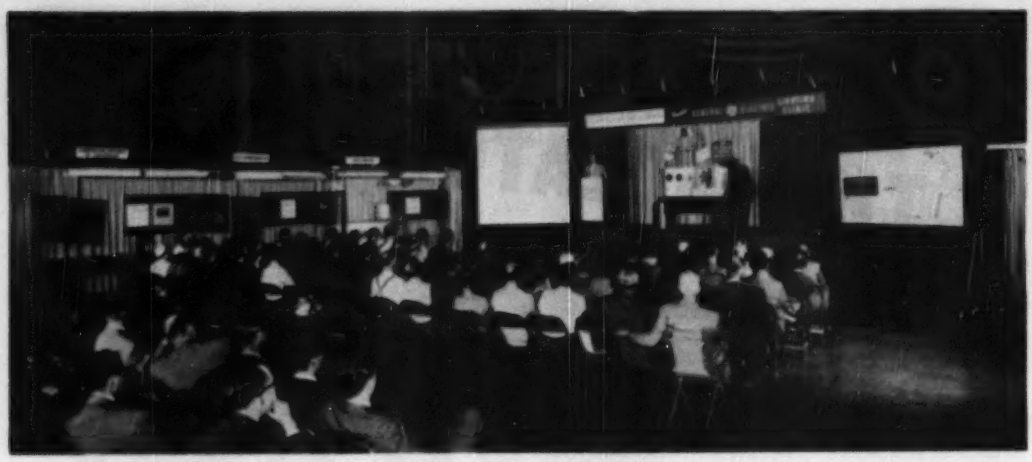
This equipment illustrates how standard ISOLATOR parts may by slight modification be made suitable for unusual conditions.

Our bulletin 140 contains a lot of information on the ISOLATOR. It is yours for the asking.

THREE E

ELECTRICAL ENGINEERS EQUIPMENT CO.

MELROSE PARK, ILLINOIS



Crowd at the school lighting session, Salt Lake City Clinic. Note exhibits around hall which were changed for each type of meeting

Everyone Learned from the Clinics

IN four Western cities the General Electric Lighting Clinic has played to audiences ranging from 25 to 500. In all cases the response to the program by the groups attending was excellent even where the attendance was disappointing. Because the Clinic will make other Western utility systems next year, a roundup of the experience with the "trial run" in Boise, Salt Lake City, Pocatello and Denver in June and July of this year will be of value. Those utility companies contemplating having the Clinic in their areas can prepare in advance to derive the most benefit from the show by profiting from the experiences of Idaho Power, Utah Power & Light and Public Service of Colorado.

By far the most satisfactory experience is reported from Denver. It was the last of the Western tour and profited by the things learned in Boise, Salt Lake City and Pocatello. Denver also had the benefit of "casing" the first showing of the Clinic last year in Texas. Harold Rankin and Ed Rowland of Public Service Co. attended the Texas show and brought back the fruits of that experience.

Hence in presenting the Clinic in Denver the program was modified and adopted more to the needs and trade cooperative situation in the Denver area than was possible elsewhere. As a result over 2,000 were registered for the series of meetings (seven in all) with an individual meeting attendance of from 200 to 500. Enthusiasm was high and already the influence of the Clinic on the interest and attitude of architects, school officials, building owners and contractors has been notable. It is even said that the Denver showing of the Clinic exceeded in results any so far anywhere in the U. S. It was bigger than the other three in the Mountain region added together.

Salt Lake City had better organization and hence results than its predecessor. Benefiting from both Boise and Salt Lake City, Pocatello's Clinic proved excellent for a city its size. Attendance exceeded that in Boise in total and at all individual meetings but one. In Pocatello both Idaho Power and Utah Power & Light sponsored the affair.

To recall just what the General Electric Clinic is a few details bear repetition. The Clinic, designed and put on the road in a big truck and trailer, by the Lighting Institute of General Electric Co., at Nela Park, Cleveland, provided a three-day series of six meetings (one in the afternoon, another in the evening) on office, store, school, industrial, and home lighting, usually with a preview meeting for the trade. The meetings are sponsored by the utility company, which arranges for the auditorium and also takes responsibility to obtain cooperating displays of available-on-the-market lighting equipment. The G-E troupe brings with it the display, educational and demonstration equipment used in the series of educational lectures.

Each session is designed to fit the requirements of a special group to whom invitations have been sent. Around the hall in which the Clinic is held the local representatives of manufacturers of lighting equipment show the equipment they have to fit that group's requirements. These displays are changed with the change in program for another group.

It is these cooperating displays that require the most thorough organization of detail. The G-E troupe has a well rehearsed program which takes care of itself. It can, however, be tailored to fit the size of a local community and its particular industries or economy if the utility works these factors out in advance with the G-E Institute.

It was found that the home lighting session drew the most attendance and that the office and industrial lighting meetings were in need of more than ordinary promotion. Store and commercial and school lighting sessions drew good attendance. In Denver school executives came from as far away as New Mexico, Kansas and Montana. This was no doubt augmented by Denver's reputation in school lighting progress.

Your Company may be Using or Planning

a Sales Idea

that could win a prize in the

1950 Hughes Award Competition

The Hughes Awards for 1950 will be based on productive sales *ideas* regardless of the size of the company or conditions in the territory served. The winners will be individuals and companies submitting successful methods, new or old, which have proved effective in solving a major appliance merchandising problem in the area they serve. Elaborately prepared entries will have no advantage over simple, documented case-histories of successful sales programs.

Arrange now to enter the promotion plan or sales campaign that helped your Company bring some worthwhile electric appliance into the homes of your area.

1950 Hughes Award Booklets are now ready for distribution—write Edison Electric Institute, 420 Lexington Avenue, New York City 17, N. Y.

Utility Division

Hotpoint Inc.

(A General Electric Affiliate)

5600 West Taylor Street, Chicago 44, Illinois

Stab-lok..

APPROVED BY UNDERWRITERS' LABORATORIES

Stab-lok outmodes all popular fusible equipment up to 60 amps!

REGISTRATION APPLIED FOR

"BIGGEST business opportunity in years!" "Outmodes practically all of today's popular fusible devices!" "Safest, most convenient circuit protection at unbelievably low cost!" "No better breaker at any price!"...That's what they're saying about the new STAB-LOK...and here's why:

The STAB-LOK System is simplicity itself. It consists of individual STAB-LOK Circuit Breakers and only 9 STAB-LOK Enclosures. By snapping breakers of the required ampere ratings into the right-size enclosure you can meet practically any circuit protection requirement in seconds.

Not only is the Federal Noark individual pole

BETTER CIRCUIT BREAKERS . . . AT FUSE BOX PRICES!

INDIVIDUAL

Stab-lok

CIRCUIT BREAKERS

STAB-LOK Circuit Breakers have a new self-locking plug-in method of breaker insertion. Breaker stabs make instant, positive contact with specially designed busses. Cooperative thermal-magnetic trip action passes momentary current surges but responds at once to shorts and dangerous overloads. Doubly dependable STAB-LOK breakers come in a range of 15, 20, 25, 30, 35, 40 and 50 amperages, single and simultaneous trip double pole.

The combination of matchless protection and low cost in the STAB-LOK System has been attained only by Federal Noark's engineered use of unique developments and by specialized assembly techniques that slash costs.

NEW STAB-LOK SELF-LOCKING PLUG-IN METHOD: You can insert a STAB-LOK Breaker in "no time". Simply put end of breaker under hook and push breaker into place. Stabs make instant contact and are locked in place without using screws.

Single pole STAB-LOK. Its complete metal heart is micromatically calibrated before insertion in case . . . only one solderless terminal . . . automatic reset . . . other unique features.

Double pole STAB-LOK. Its simultaneous trip action assures double pole protection. No handle ties. Only popular priced breaker with this feature.

NEW

Stab-lok

ENCLOSURES

Most of the new STAB-LOK Enclosures are the unique Noark "combination" type for either flush or surface mounting. Each enclosure has an insulated neutral which is groundable on all equipment suitable for service entrance . . . Their capacity range constitutes a complete line that replaces *loadcenters* up to 16 circuits, *panelboards* up to 20 circuits, and fusible *switches* up to 60 amps.

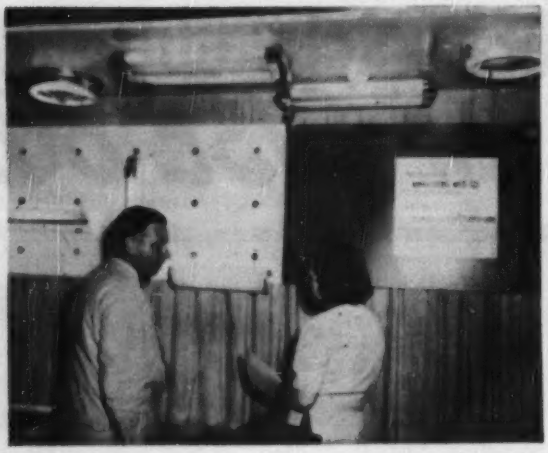
STAB-LOK "FLUSH-SURFACE" ENCLOSURE: "Flush-Surface" Enclosures are delivered with picture-type frame in place and ready for surface mounting. For flush mounting in plastered walls, discard frame and mount box on studding; in dry walls, same procedure except cut hole in wall board to dimensions of inside flange.

STAB-LOK System the most flexible and convenient, it is also the most economical ever devised. STAB-LOK enables you to get CIRCUIT BREAKER PROTECTION *AT FUSE BOX PRICES.* Federal Electric Products Company, 50 Paris St., Newark 5, New Jersey.

FEDERAL NOARK

Stab-lok Circuit Breaker System

Complete line of Federal Electric Products includes Motor Controls, Safety Switches, Service Equipment, Circuit Breakers, Panelboards, Switchboards, Control Centers, Bus Duct ★ Sales Offices in principal cities.



Typical of more than 20 exhibits of manufacturers equipment are these two. Equipment appropriate to each meeting was on display

One of the suggestions made by the Institute for promoting attendance was to hold a preview meeting for the trade. This, however, did not prove too successful nor where tried was it sufficient to stimulate the attendance on such short notice as a result of it. Denver, after the Texas experience, did not hold a trade preview as such. However, by acquainting the National Electrical Contractors Assn. Rocky Mountain Chapter in advance with the purpose and possibilities of the Clinic, the contractors association used the Clinic as the feature attraction for its annual meeting with architects.

A special, concentrated showing, exclusively for the architects and NECA hosts was held. G. B. Buck, vice-president, Public Service Co. of Colorado, which sponsored the Clinic, welcomed the group of over 200, then turned the meeting over to Don Larson, chapter manager. The concentrated program covered the science of seeing, office, store, school, industrial and home lighting. There were 64 architects from 28 firms and 40 contractors from 36 firms present. Added were over a hundred from the utility and wholesale and manufacturer agencies.

Immediately after the Clinic the dinner was held at the Cosmopolitan Hotel. Karl Krummel, NECA chapter president, in his short talk stressed the benefits of separate electrical bids. Paul Anderson, architects group president, responded. Attendance was increased by several more contractors and architects and representatives of the union. The chapter presented kits to the architects which included electrical specifications, NECA promotion literature on specialty contractors, the NECA guarantee, etc. and a chapter roster. Contractors from Colorado Springs, Pueblo, Longmont, Greeley, Boulder, Cheyenne, Casper and Laramie were present as well as those from Denver.

This was a case where the industry's teamwork was enlisted in conjunction with the Clinic and proved successful. In Salt Lake City it was felt that the preview meeting was not sufficiently ahead of time to be as effective as it might be.

Other suggestions that came out of the Clinics have been to hold the home lighting show first. In the larger cities two sessions, afternoon and evening can be filled, but in smaller cities it is one opinion that the school and office lighting sessions could be combined.

More time should be provided for setting up exhibits and material and for taking them down and setting up the next. It should be insisted that a factory or wholesaler representative be on hand to man each booth when the show is scheduled. And it is a good idea even during lunch and dinner recesses to keep someone on hand who knows the equipment and can explain it to the late or early visitors.

At the Denver showing the manufacturers' representatives were brought into the picture more. They were introduced at the end of each session and combined in the program.

The program, it was felt, should be modified for smaller cities or towns and directed more to the types of customers in the area. This can be done by consultation with the Clinic staff in advance.

Promotion of attendance, it was also felt, was a bit too formal and not informative enough. Engraved invitations to attend were good but told nothing about what might be expected by attending. A more thorough preselling job would bring out more attendance.

While it can be understood that as General Electric Co. has gone to the expense of preparing and putting on the road this show it is only natural that it insist that only equipment of its customers be exhibited, this restriction is one of the reasons that more utilities are not signing up for the show. Some have expressed the reason as one of policy to stage events of this type with the broadest possible cooperation among all the competitors in the trade. They can understand the G-E position but feel that their own must be on a broader base. The excellence of the Clinic show is not depreciated.

Before the Clinics make another tour West next year many refinements of presentations born of the experience of this year will be worked into it. So far Los Angeles Department of Water & Power and Central Arizona Light & Power Co. are signed up for it and others have it under advisement.

● To Acquaint the public with the safe electrical cord and cord set program, four leaflets have been prepared by the Safety Electrical Cord Committee, under the sponsorship of the International Association of Electrical Inspectors. They tell briefly but completely a safety story in the use of electric equipment in the home and are designed for distribution through various organizations such as utilities, electric leagues, chambers of commerce, schools, etc. Leaflets are offered in quantities at $2 per 100 by the committee at 155 E. 44th St., N.Y.

Only One

*I*n medieval times, a coat-of-arms had an importance that could not be overestimated. It was granted as a personal badge, signifying the attributes and accomplishments of its proprietor—and as such was respected thruout the civilized world. It had no duplicate.

In turn, the emblem imposed upon its owner a responsibility for maintaining an enviable reputation—a condition which stimulated general confidence in him.

Times have changed, but not all *things*. The sense of sanctity of an emblem is prevalent today as it was hundreds of years ago. That is why we take such pride in our trademark: NICHROME.

It is evidence of our accomplishment; our unique, personal badge — respected everywhere. Granted solely and wholly to us by the United States Patent Office over forty years ago, it symbolizes a series of superb electrical heat and corrosion-resistant alloys (developed and produced *only* by Driver-Harris Company) which today is serving industry all over the world.

Yes, there are other excellent heat and corrosion-resistant alloys, but *only one* NICHROME—the product of exclusive Driver-Harris knowledge and techniques.

We are well aware of our obligation to maintain its reputation, both here and abroad. In fact, such obligation is an inspiration to give of our best—now, tomorrow, and always.

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THE MONTH IN BRIEF

Non-Federal and Federal Projects Required

Unless non-federal hydro projects are added to federal dam construction now underway in the Pacific Northwest, the region will not be able to meet its commitments under the defense program, except at the expense of other industries and the public, the Pacific Northwest Utilities Conference Committee warned last month. The committee met in Seattle in response to an NSRB request for a statement of regional power resources as they might be affected by the rearmament program. Apparently referring to proposed expansion of the aluminum industry, the committee warned that any new large-scale loads would aggravate the situation, require further operation of expensive steam plants and increase the cost of power to present customers. In the event of stepped-up war production, other industries and private citizens would be in for a power cutback, according to C. A. Erdahl, Tacoma commissioner of public utilities and committee chairman.

Fish Commission Turns Down Dam

The Oregon State Fish Commission has refused its consent to the Northwest Power Supply Co.'s proposed $12,000,000 dam on the Deschutes River in north central Oregon. Following debate between fish and power groups in the 1949 state legislature, an interim committee was appointed to study the proposal. The state hydroelectric commission required approval of the fish commission before authorization. In refusing approval, the fish commission held that the company did not submit plans for fish rehabilitation in waters adjacent to the dam. General Thomas M. Robins, president of the company, said that cooperation in plans for fish and power had been intended and that he had not regarded negotiations as hopeless or at the point of final decision. Application for FPC license is still pending.

Kelso Again Opposes Tacoma Dams

City of Kelso, Wash., has gone on record a second time opposing construction by the city of Tacoma of two hydroelectric dams on the Cowlitz River. Because of the Korean situation and increased demand for power, there has been some sentiment favoring the dams, provided federal approval is secured, despite state action in declaring the river a fish sanctuary. The Kelso city council sent its protest to the Federal Power Commission, which had scheduled a hearing on the project.

Edison Purchases Land for Steam Plant

Southern California Edison Co., has purchased 124 acres southeast of Los Angeles as a site for a steam plant, and steps were under way last month to have the property rezoned. Feature of the new plant will be use of effluent from sewage treatment plants in the area for cooling. A maximum of 8,000,000 gal. daily will be needed in the plant's cooling towers, it was reported. The water later will be used for irrigation on surrounding agricultural land. Edison is now constructing facilities at Big Creek 4 that will add 84,000 kw. to its system by July 1951.

Three 100,000-kw. Steam Units Ordered

Three new 100,000-kw. steam-electric generating units have been ordered by Pacific Gas and Electric Co., for installation within three years. They will add 402,000 hp. to the company's system at a cost of approximately $50,000,000 and will be installed at the Moss Landing or Contra Costa plants, or both. Two will be ready for service late in 1952 and the third early in 1953. The units are over and above the company's six-year, $800,000,000 postwar expansion program, which is adding 1,826,400 hp.

Emergency Interconnections Approved

FPC has approved additional permanent interconnections for emergency use only by the Puget Sound Power & Light Co. to alleviate power shortage. These are between Bonneville's 110-kv. Snohomish-Beverly No. 2 line and the company's Beverly Park substation and between the 66-kv. line of Clallam PUD and the company's Bremerton Junction sub. The commission denied a company request for blanket approval of future additional interconnections.

Negotiation Offer Rejected

Offer of the Northern Wasco County PUD to negotiate for purchase of Pacific Power & Light Co. properties in Wasco and Sherman counties in Oregon for a purchase price of $1,065,000, has been rejected by the company. In a letter to the PUD directors, Paul B. McKee, PP&L president, stated that the proposed purchase price is only a small fraction of the property value; is actually less than the new investment in additions and improvements since January 1948.

Special Election Called by PUD

Hood River PUD commissioners have called for a special election on Sept. 19 on a $1,000,000 bond issue proposal. The money would be used to acquire and expand the Hood River Electrical Cooperative and to provide working capital. The purchase price of the co-op, which has been offered to the PUD, is estimated at approximately $300,000. The area is served also by Pacific Power & Light Co.

Another Foreign Bid Ruled Out

Because it failed to meet the city's requirement as to delivery dates, a bid by Ferranti Ltd. of England to furnish two transformers for Seattle City Light's North substation was ruled out recently by City Purchasing Agent Paul R. Hendricks. The Ferranti bid was low, $232,800. The award was made to the General Electric Co. on a bid of $370,000. The high bidder was the Pennsylvania Transformer Co., $409,196. Specifications required delivery of the first unit within 300 days from the contract award, the second unit 30 days later. The Ferranti company promised delivery of the first unit in 1,150 days and the second unit in 1,200 days. This meant a delay of more than three years. General Electric Co. won a contract award for six City Light transformers last January. At that time Ferranti company quoted the low figure but did not comply with specifications.

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THIS single factor should govern your choice of equipment today! *For only by making today's expansion or replacements part of a preconceived future system can you hope to handle tomorrow's loads economically.*

The type of system you plan for will naturally depend on many factors. But far-sighted system planners agree that it should have one important characteristic: *Simplicity!* They point to loop or radial subtransmission patterns as logical goals, for the inherent simplicity of these systems promises handsome savings in distribution costs. Complex interconnections which pose problems of relaying are eliminated. The cost of equipment needed at numerous system tie-points is saved. Maintenance costs are less.

Simplified subtransmission also paves the way for further system simplification. Spot and secondary networks, and the use of banked secondaries represent typical opportunities for combining simplicity with improved service at lower cost. But remember . . . the equipment you choose today *must* bear a relationship to the system you plan for tomorrow. Recognition of this fact explains today's trend to *standardized factory-assembled substations* which provide for less costly bus regulation . . . utilize less costly equipment and give you the flexibility necessary to handle any distribution need.

These are helpful guides to modern system planning. But let Westinghouse help with your problem. Our engineers and complete system planning facilities are at your service. Call your Westinghouse office or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

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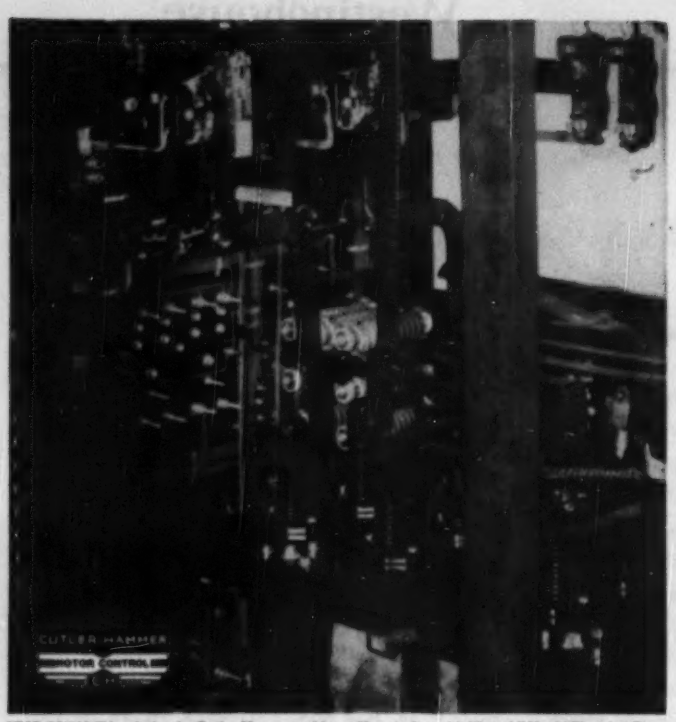

NEAT, COMPACT insulation for Cutler-Hammer rubber mill controller with "Scotch" No. 33 Electrical Tape.

Now! Low-cost protection for high-tension bus bars

Cutler-Hammer mill-duty controllers protected with plastic tape

Mill-duty controllers call for wiring that can take steady punishment —that's why Cutler-Hammer uses "Scotch" No. 33 Electrical Tape. This plastic-backed tape gives "C-H" greater production economy, neater, cleaner results. Bus bar and terminal wrappings on *many* Cutler-Hammer controllers are given dependable protection with plastic tape—a plus feature in products already world famous for quality.

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Quick Facts about "Scotch" No. 33 Electrical Tape

- TOUGH—plastic backing is abrasion resistant, unaffected by water, oil, alkalies, alcohols.
- HIGH DIELECTRIC—over 10,000 volts.
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- STRETCHY—conforms to odd surfaces.
- REMEMBER—for permanent high-heat insulation try "Scotch" Electrical Tape No. 27 with gloss-cloth backing, thermo-setting adhesive.

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General Export: Duron Abrasives Corp., New Rochelle, N.Y. • In Canada: Canadian Duron Abrasives Ltd., Brantford, Ontario

THIS MONTH'S NEWS

Idaho Power Plans New Hydro Plant on Snake

Idaho Power Co. has announced plans to construct a 90,000-kw. power generating plant on the Snake River near Boise—its sixth such development since 1946, and its largest. Cost of construction was estimated at $18,500,000, and completion was scheduled for 1952.

The project will include an earth dam, concrete spillways and power house with three 30,000-kw. generators. The dam will be about 120 ft. high, and its reservoir will reach about 32 miles upstream. Fluctuation of the water level in the reservoir will not exceed 2 ft.

The project will be known as the C. J. Strike hydroelectric development in tribute to the company's former president and general manager, who died in 1948.

T. E. Roach, Idaho Power president, said that "considerable benefit to local irrigators may result from creation of the reservoir. Flow of the river will be regulated more evenly, and the reservoir water level will reduce the lifts considerably for existing pumping installations along the pond area.

The new development will bring the total generating capacity of the Idaho Power company's system to almost 400,000 kw.

Power from the dam will be taken into the company's interconnected transmission systems through two 138,000-volt lines, one from the power plant to Mountain Home and the other from the power plant to Caldwell.

City of Fairbanks Buys Electric System

The City of Fairbanks, Alaska, has acquired the electricity, water and steam distribution systems of the Northern Commercial Co. for $260,993 and has installed Frank Mapleton as general manager. The city will buy power from the Northern Commercial Co. for its 3,400 customers until it can complete its own power plant now under construction. Completion is scheduled for Aug 1, 1951. Northern Commercial Co. had been supplying utilities service for more than 40 years.

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Circuit Breaking

Plugs and Receptacles

30, 60 OR 100 AMPERE CAPACITIES • 250 V. D. C., 600 V. A. C.

Durability . . . ease of wiring . . . complete safety! You get all three with Appleton Circuit Breaking Plugs and Receptacles!

Cadmium-plated Malleable Iron Junction boxes and highest quality die cast aluminum housings on both plugs and receptacles guard this equipment against the hard knocks of severe service conditions. Complete terminal units equipped with solderless connectors in both plugs and receptacles assure fast, easy wiring.

Receptacle housings are available in four styles —Dust-proof lift-cover, threaded with cap, or threaded without cap, and plain. Plugs available with or without clamping ring.

This equipment can be used for reversed service by installing terminal units in opposite housings.

6 IMPORTANT FEATURES!

1. Path of grounding circuit through plug sleeve and receptacle housing.
2. Complete terminal units in both receptacle and plug are removed for wiring by loosening 2 screws on either side of receptacle or plug housing.
3. Circuit wires may be installed easily to solderless terminals.
4. Phosphor Bronze springs in plug and receptacle insure grounding before poles complete circuit. (In Style 2, grounding pole is made longer so that grounding circuit is made first, broken last.)
5. Gasket on clamping nut assures vaportight seal between plug and receptacle.
6. Concealed cord clamp with rubber bushing grips cable securely, making plug vaportight. Smooth, easy-to-handle aluminum cap covers complete clamping unit.

Appleton Plugs and Receptacles are made in two styles: Style 1 (as illustrated) is designed for use in installations where corrosion is not excessive and where the plug sleeve and the receptacle housing may serve as a safety circuit.

Style 2 grounding is made through extra pole in Plug and Receptacle. This style is recommended where excessive corrosion exists. Grounding pole is made longer so that grounding contact is made first and broken last.

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UTAH POWER AND LIGHT SCHEDULES NEW PLANT

Construction of a 75,000-kw. steam power generating plant in Salt Lake City at a cost of $10,500,000 is scheduled by Utah Power & Light Co.

The new facility will be an extension of the 66,000-kw. steam plant now being erected for UP&L and due for completion in August 1951. The 75,000-kw. unit, largest in the company's system, will go on the line in the fall of 1952. Construction will begin in late fall or early spring.

Plans call for an 85-ft. extension of the turbine bay which is now nearing completion at the 66,000-kw. plant, to house a turbogenerator already on order from Westinghouse Electric Corp.

The 66,000-kw. generator now being completed will burn low-grade residual fuel brought by pipeline from the nearby Salt Lake Refining Co. The 75,000-kw. unit just announced will be designed to burn coal, residual oil or gas as fuel.

The new unit will be built as part of a $61,000,000 expansion program announced by UP&L two years ago. A 44,000-kw. steam-electric plant near Provo Canyon is virtually complete, the 66,000-kw. unit in Salt Lake City is the second phase of the program, and the newly announced 75,000-kw. plant will be the third major power station added to the company system since the end of World War II.

Bids Called by Engineers On Chief Joseph Dam

Bids on a $30,000,000 contract for second-stage construction of Chief Joseph Dam across the Columbia River 51 miles below Grand Coulee Dam will be opened Nov. 1 at Seattle, according to an announcement by Lt. Col. A. J. D'Arezzo, acting district engineer of the Seattle District, Corps of Engineers. The dam will be the second largest power producer in the world, exceeded only by Grand Coulee.

The contract will include all concrete work to be placed within the first cofferdam now being constructed by the Peter Kiewit Sons' Co. of Longview, Wash.; a second cofferdam inclosing the south half of the dam and concrete work within that cofferdam; completion of the main dam and excavation for the power house and intake structure. The first-stage cofferdam is scheduled for completion by next April, after which concreting operations can begin and excavated rock be placed to protect the cofferdam from high water during the 1951 flood season.

All concrete work within the first cofferdam and rock fills and slope protection on the right abutment are scheduled for completion prior to the high water season of 1952, as is completion of the rough excavation for the power house and intake structure.

The dam will be equipped with deicing equipment. Warm water from the lower reaches of the reservoir will be forced to the surface by compressed air to prevent ice forming before the crest gates. Electric heating units will be installed behind the side seal plates on the taintor gates to prevent ice forming on the downstream side.

Construction is scheduled to be completed and the first four generators operating in 1956, with three generators to be installed each year thereafter until the initial 20 units are in service.

● A NEW 7,500-kva. turbine generator is on order with General Electric Co. as part of Public Service Co. of New Mexico's $700,000 expansion program for Santa Fe power station. The station, placed in operation in 1949 at a cost of more than $1,000,000, is also scheduled to receive a new cooling tower, condensers and switch gear for use with the new unit, which is expected to be completed by March 1951. Stearns-Roger Mfg. Co. of Denver, which built the station, will do the construction work.

● Two PUDs in western Washington will build new office buildings. PUD No. 2 of Pacific County will receive bids at Raymond until Sept. 11 for construction of a one-story 16x24-ft. office building at South Bend. Snohomish County PUD has purchased eight lots in Everett for early construction of a headquarters building.

● WESTINGHOUSE ELECTRIC CO. submitted a low bid of $421,274 to the Corps of Engineers for supplying a 20,000-kva. alternating-current generator and appurtenances for the Big Cliff Dam power plant, a part of the Detroit project on the North Santiam River in western Oregon.

● WESTINGHOUSE ELECTRIC Corp. has received a $4,277,000 order from the Corps of Engineers for four 64,000-kw. generators to be installed at the Chief Joseph Dam project.

● SNOHOMISH COUNTY PUD of Everett, Wash., has awarded a $32,441 contract to the Midland Wire Co. of Tiffin, Ohio, for 107,000 lb. of copper wire for system extensions.

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AD DISTRIBUTION COSTS
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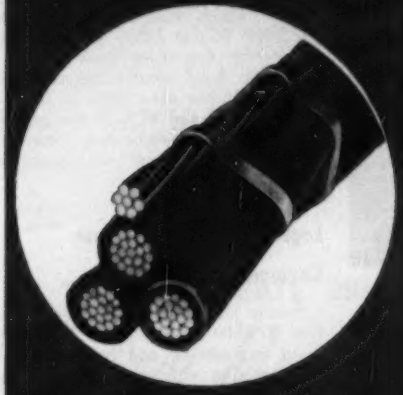

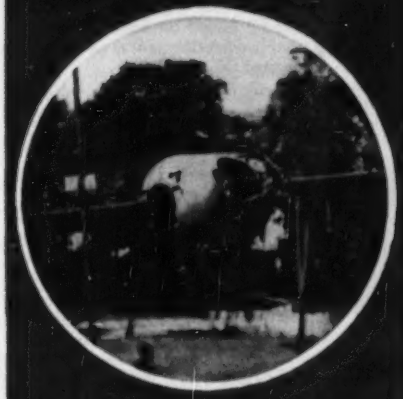

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WIRES & CABLES

Wherever the installation, whatever the service conditions, Simplex-ANHYDREX Aerial Cables provide a sure-fire means of cutting the cost and improving the performance of overhead distribution systems.

Anhydrex insulated, neoprene jacketed, and designed for installation by either the self-supporting or spinner methods, they furnish a wealth of advantages over open wire lines — advantages that mean uninterrupted service year in and year out plus big savings on installation and maintenance. Some are listed below, but there are many others you'll want to know about. All are described in the Simplex Aerial Cable Catalog which we will gladly send to you upon request. Simply fill in and mail the coupon below.

ADVANTAGES FOR INSTALLATION

- Less labor needed to install
- Can be installed on existing pole lines
- Crossarms not needed
- More circuits per pole
- Low congestion on poles; phases and neutral assembled together
- Little or no tree-trimming required
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- Attractive appearance

OPERATING ADVANTAGES

- Better regulation
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- Neoprene jacket provides protection against oil, chemicals, fungus, heat and sunlight
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- Less maintenance required

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79 SIDNEY ST., CAMBRIDGE 39, MASS.

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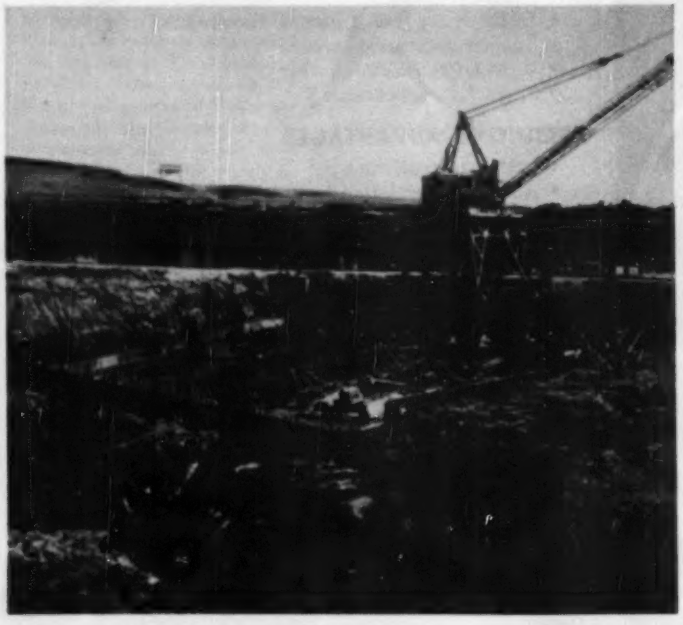
ANDERSON RANCH DAM NEARING COMPLETION

Anderson Ranch Dam, world's highest earth-fill structure, is scheduled for completion this fall. Key structure in Idaho's Boise project, it later will become a part of the proposed Mountain Home project. Installation of two generators, with 27,000 kw. capacity, construction of outlet works, a power house and spillway are being completed A 115-kv. transmission line will connect the plant with Idaho Power Co.'s system at Mountain Home



UNITS 1 AND 2 UNDERWAY AT McNARY

This photo, taken Aug. 8, shows progress at McNary project on the Columbia. Preparations are being made to pour intake slab for units 1 and 2 which will go on the line during 1953

UTILITY COMPANY SERVES PEAK POWER DEMAND

Pacific Gas and Electric Co. late in July served the greatest peak in power demand in its history—2,519,000 kw. Generating capacity still available over and above that figure was 476,000 kw. a margin of 19%. At the time of the peak the company had 104,000 kw. in old steam plants shut down.

The new peak represented an increase of 209,000 kw. over the 1949 record, which was established July 27, 1949. It was 123% greater than the prewar peak of ten years ago.

Of the total generating capacity available in the area, 83% is in PG and E plants and 17% in the plants of the Central Valley project and other producers, including municipalities and districts.

Legal Expense on Purchase Covered by Appropriation

Seattle City Council has appropriated $79,500 in City Light bonds to cover engineering and legal expense in connection with proposed purchase of Puget Sound Power & Light Co. properties.

The legal expense includes an opinion from Thomson, Wood & Hoffman, the city's New York bond experts, as to the legality of bonds that would be issued to finance the transaction, provided approval of the voters is secured Nov. 7.

The city now has spent some $250,000 on expenses relative to preparing the purchase proposal for a vote.

● The Utilities Committee of the Seattle City Council has approved a request for $500,000 to continue the city's $3,000,000 street-lighting program. An initial $500,000 allocation from a bond issue voted several years ago is virtually exhausted and the new allocation is needed to permit purchase of additional materials and equipment to avoid expected price increases, said City Engineer R. W. Finke.

● To Raise $22,000 a year for installation of an ornamental street lighting system, city commissioners of Vancouver, Wash., have approved a 3% tax on sales of electricity. Effective Sept. 29, the tax will not apply to electricity furnished to federal, state or municipal agencies. It will provide funds for some 200 light poles and brackets to replace equipment installed 20 years ago along downtown streets by Vancouver merchants.

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IT TAKES SEPARATE UNIT CONSTRUCTION
FOR *Fast Meter Assembly* *

Meters made like this save money. Take one apart. See how it's made. Compare.

Notice how the Westinghouse meter practically assembles itself. There's no adjusting or fitting. The elements are *made* to fit together. That comes from precision manufacture.

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Want more proof? Call your nearest Westinghouse office or write for the new booklet, B-4665, "What It Takes for Long-time, Low-cost Metering." Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-40371

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DRY TYPE TRANSFORMERS exclusively!

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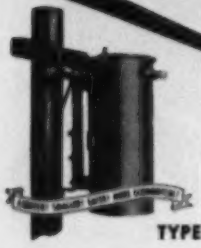
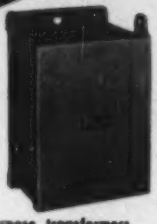


TYPE ACO

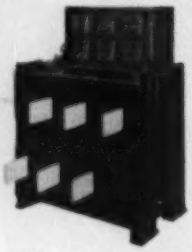
All purpose, indoor or outdoor, dry type distribution transformers. Sizes to 100 KVA, voltages to 5000 V.



TYPE C

General purpose transformers, 600 volts and below; 1-15 KVA inclusive, single or three phase completely self contained.

NEMA



FURNACE TRANSFORMER

3 PHASE, 3/2 PHASE, 1 PHASE

Uses—Forging, heat treating, melting, resistance heating, welding, etc.

TYPE F - UNIT SUBSTATION

1000 KVA, 4160Y 60 Cycles, 3 Ø —480 delta; Fused, load interrupter on H.V. (left). Drawout type breakers and metering equipment on L.V.

ONE OF THE WORLD'S LARGEST MANUFACTURERS OF DRY TYPE TRANSFORMERS EXCLUSIVELY

1 to 2,000 KVA up to 15,000 Volts to meet Individual Requirements

- DISTRIBUTION
- GENERAL PURPOSE
- UNIT SUBSTATION
- PHASE CHANGING
- ELECTRIC FURNACE
- RECTIFIER
- WELDING
- MOTOR STARTING
- SPECIAL

MTC produces a complete line of quality transformers to 2000 KVA. A newly expanded plant with the most modern equipment, plus a background of years of dry type specialization, assures maximum transformer value.

MTC

MARCUS TRANSFORMER CO.
INC.
40 MONTGOMERY STREET
HILLSIDE 5, NEW JERSEY

OFFICE SPACE NEEDED IF PURCHASE APPROVED

Seattle City Light will require 30,000 sq. ft. of additional office space should it acquire the properties of the Puget Sound Power & Light Co., a proposition upon which the city will vote this fall, the City Planning Commission has reported to the city council.

This is over and above 6,000 additional sq. ft. City Light now requires to relieve overcrowding, the commission found.

E. R. Hoffman, City Light superintendent, has proposed that City Light be allowed to purchase the Insurance building, just across the alley from the City Light building in the central business district. The department now leases 4,721 sq. ft. of space in the Insurance building at $2.65 a sq. ft. for two of its three engineering divisions.

The City Light building, although a comparatively new structure, would be difficult to enlarge because of its design. It "represents a permanent location for many years to come because of the heavy and extensive electrical installations it contains," the planning commission reported.

The city's purchase of Puget Power properties will not include Puget Power's office building, an old structure located at an opposite end of the business district from the City Light building.

Eligibility for Possible Jobs Announced by City Light

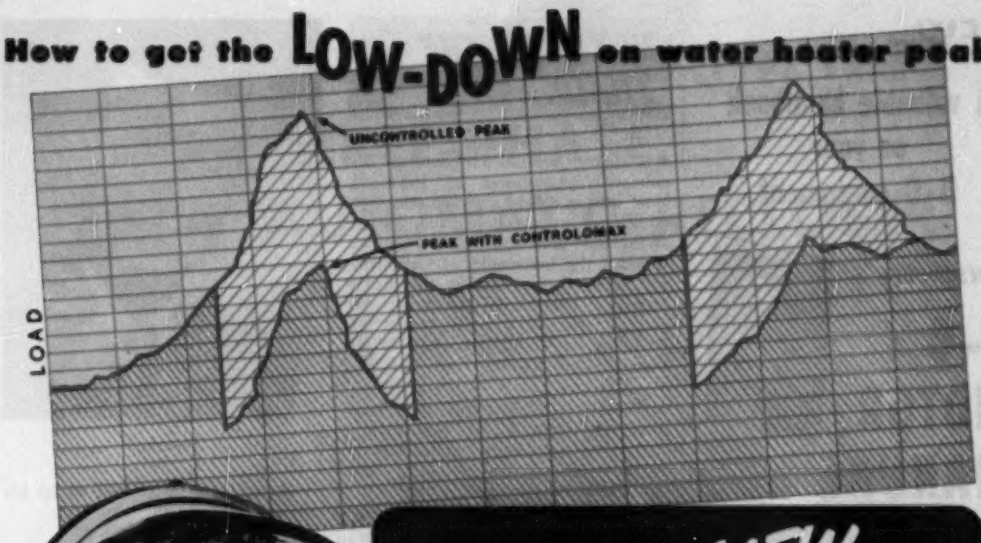
Should Seattle voters this fall approve purchase of Puget Sound Power & Light Co. properties in the Seattle area, Puget Power employees will have first chance at additional City Light jobs thus created, Corporation Counsel A. C. Van Soelen has advised the Municipal Civil Service Commission.

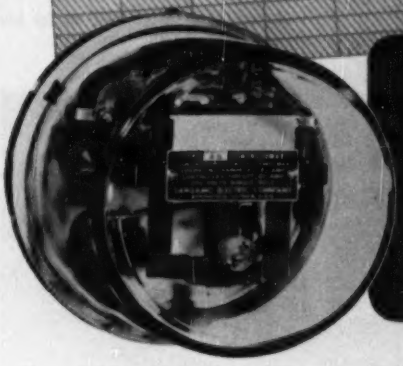
To be eligible for such appointments, however, they must have been employed by the company in a "like position" more than one year, must be Seattle residents and must pass a qualifying civil service examination.

The number and kind of new positions to be set up will be determined by the City Council upon recommendations of E. R. Hoffman, City Light superintendent.

Some City Light employees had hoped the newly created positions would be classed as "promotional," thus giving them the opportunity to compete for better jobs.

How to get the LOW-DOWN on water heater peaks





with the *NEW* SANGAMO CONTROLOMAX

Type AS (Socket) Enclosure

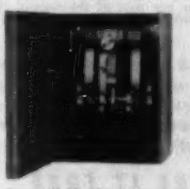
To assure profitable returns from water heater loads, the effect of their demands must not result in costly peaks, as is the case when electric ranges, ironers, clothes dryers or other large current consuming devices are used at the same time water is being heated.

Now, an exceptionally simple control device, the new Sangamo Controlomax, will prevent water heater demands from adding to these peaks. When load currents reach pre-determined levels the water heaters are disconnected. As soon as the load current is reduced to an established level, the water heater is re-connected. Thus, on the basis of consumers' load and use habits, peaks are reduced and long charging periods and low demands will result.

The Sangamo Controlomax is an automatic thermal switch. A bimetallic strip with a slow, positive motion operates a contact. Maintenance will be practically nil. Time settings are unnecessary. The first cost is low, and operating costs are at a minimum.

Now, Sangamo adds to its complete line of time switches and meter-time switch combinations for *time* control of water heater peaks, a simple thermal control based on the *magnitude of the consumer's load.*

Write for bulletins on the complete line of controls for electric water heater loads.



Type AB (Box) Enclosure

SANGAMO ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS

NEW—

A valuable handbook on your D-C equipment

Dusenbery's

D-C MOTOR MANUAL

can help you select and maintain this equipment most efficiently

- This new book provides the information which years of experience have shown to be most useful to the man responsible for the installation and maintenance of modern d-c motors, generators, AND ELECTRONIC CONTROL EQUIPMENT.
- It explains in clear practical terms how each part and circuit works; what type of motor is most efficient and economical under certain operating conditions; the latest methods of installing and servicing each part; how to reconnect motors; how to test for power and losses.
- It contains FULL INFORMATION ON BRUSHES—how to select replacements; how to be sure of proper installation.
- ALL THE LATEST CONTROL EQUIPMENT is fully explained, with complete instruction in the operation and maintenance of the Rototrol, Amplidyne, Maxispeed, Mot-O-Trol, Thy-Mo-Trol systems; rectifier tubes, etc.
- More than 7 pages of MAINTENANCE CHARTS give the symptoms and causes of every conceivable motor trouble or possible failure in any part of the control circuits. Clear wiring diagrams are given for every circuit.

This book can save you expensive and time-wasting breakdowns; can help you get full benefit from today's wonder-working direct current equipment.

SEE IT FREE

The Macmillan Co., 60 Fifth Ave., New York 11

Please send me a copy of DIRECT CURRENT MOTOR MANUAL @ $5.50. I will either remit in full or return the book within 10 days without further obligation.

Signed.....

Address.....

W

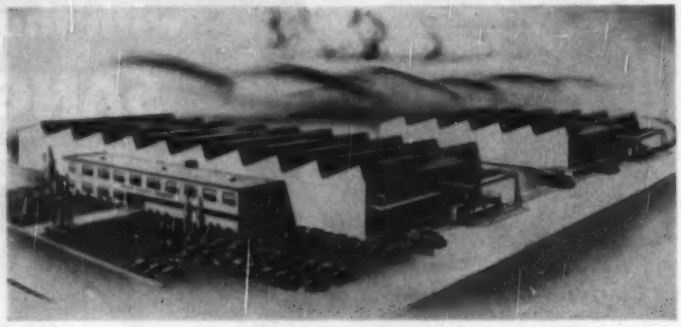
.....

NOTES ON THE TRADE

● BRYANT ELECTRIC CO. has announced appointment of JOHN H. DONAHOO as a field representative covering Utah, southern Idaho and parts of Nevada and California. Donahoo attended the University of California and spent three years in the Radio Technical Division of the Army Air Force. Prior to joining Bryant he served as a sales representative for the National Cash Register Co.

Donahoo

● CUNNINGHAM DISTRIBUTORS Inc., Albuquerque, N. M., has been named distributor for Admiral Corp., covering 21 counties in northern New Mexico. Although the firm has been handling Admiral products since last April, the final distributor set-up has just been completed.

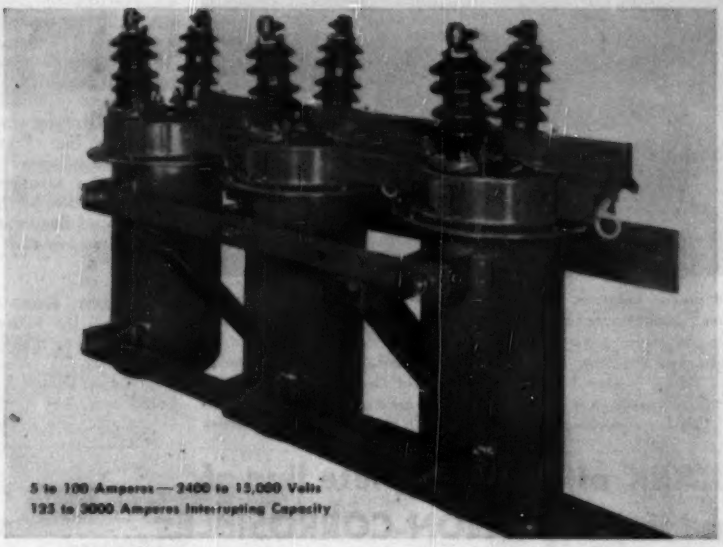


Artist's drawing of Pacific Electric Mfg. Corp.'s $500,000 Santa Clara, Calif., plant, for which ground was broken Sept. 1. The new plant will have 87,000 sq. ft. of floor space and will be located on a 23-acre site. Plans call for two large mill-type factory buildings, with attached two-story office facilities—all of the most modern factory design. An estimated 200 workers will be employed when full production is attained, including approximately 100 now employed at a leased plant in San Jose. Production plans will not affect the current program at the company's San Francisco plant, where 407 are employed, according to A. A. Browne, vice-president and general manager. Joseph S. Thompson is president of the firm, which was organized in 1906; Edward F. Sixtus is vice president in charge of sales

Western Insulated Wire Co.'s new $500,000 factory at 2425 E. 30th St., Los Angeles, will manufacture Neoprene—and rubber-jacketed portable cords and cables, asbestos-insulated wires and cables, miscellaneous cords, fixture and communication wires and cables

new TYPE FR-3

THREE-PHASE AUTOMATIC RECLOSER



5 to 100 Amperes—2400 to 13,000 Volts
125 to 3000 Amperes Interrupting Capacity

General Electric's new FR-3 three-phase relayed automatic recloser extends the many advantages of the G-E Type FR-1 single-phase recloser to three-phase operation for rural distribution systems.

SIMPLER—Three FR-1 single-phase reclosers of the design that has been time-proven in service have been combined as a single unit designated Type FR-3. Thus . . :

INTERCHANGEABLE PARTS greatly reduce maintenance costs. As the FR-3 is essentially three FR-1 single-phase units, it's necessary to carry in stock parts for only *one* type of recloser.

COMMON LINKAGE ties together the lock-out mechanism of the three reclosers, thus assuring positive operation. Having three reclosers working as a unit eliminates the hazard of burning out three-phase loads by one phase locking-out while the other two phases remain closed.

INTERMITTENT FAULTS cause the three reclosers to operate independently, as a single-phase recloser.

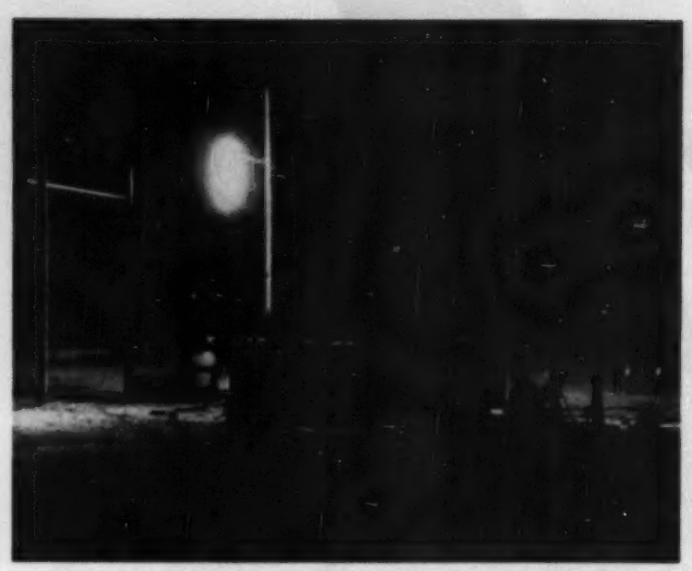
PERMANENT FAULTS in any one phase will automatically lock-open all three reclosers. Close one and you close all three.

THREE SEPARATE TANKS—instead of one big tank—greatly reduces the possibility of phase-to-phase faults, and thus further improves your service continuity record.

For complete information on the General Electric Type FR-3 recloser ask your G-E Sales Representative for a copy of GEA-5466, or write to *Apparatus Department, General Electric Company, Schenectady 5, New York.*

GENERAL ELECTRIC

With Factories in Anaheim, Los Angeles, Oakland, Ontario* San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities



Ten-million-kva. circuit breaker undergoes test at Grand Coulee. Tests conducted Aug. 20, were "very satisfactory" according to officials of Westinghouse Electric Corp. and the Bureau of Reclamation. All of the power in the Northwest Power Pool contributed to the fault current which was some 2½ times greater than all the normal delivery of power in the pool. Four of the 230-kv. breakers are in service at Grand Coulee. Tests were under supervision of Dr. W. M. Leeds, manager power circuit breaker development, Westinghouse, and A. F. Darland, supervising engineer for the U. S. Bureau of Reclamation

● R. G. Holabird has been advanced to the position of Western regional manager for National Electric Products' newly created Western region. He will make his headquarters at San Francisco. Holabird has been with the company since 1931. He covered the Los Angeles territory until 1943, when he took over as manager of the San Francisco sales office. District managers in the new region are: William D. Ross, San Francisco district manager; N. L. Bost, Northwest district manager, headquartered at Seattle, and R. E. Stone, Southwest district manager, with Los Angeles headquarters. All three district sales managers now report to Holabird.

● The Distributing Co. of California Inc., San Francisco, has been named distributors of Sweden speed freezers for northern California and western Nevada by the Sweden Freezer Mfg. Co. of Seattle, makers of soft ice cream freezing and dispensing equipment.

● Majestic Radio & Television Inc. has added the following new dstributor outlets on the West Coast for its radio and TV receivers: Ballard & Carter Co., Ogden, Utah; Pacific Telecoin Corp., Los Angeles; Pacific Telecoin Corp., San Francisco.

Only KILLARK offers a complete line of fittings and fixtures in NON-CORROSIBLE ALUMALLOY ▸

Outstanding advantages never before available are now offered in new Killark Alumalloy Fittings and Fixtures . . . thoroughly tested and approved in the field. They're lighter than iron . . . resistant to chemical corrosion . . . burr-free in smoothness for greater safety . . . clean-cut threads for easier installation. Whatever your needs . . . depend on the complete Killark all-purpose line.

- ENTRANCE FITTINGS
- CONDUIT BODIES
- FLUSH SWITCH FITTINGS
- EXPLOSION PROOF FITTINGS
- VAPOR-TIGHT LIGHT FIXTURES
- EXPLOSION PROOF LIGHT FIXTURES
- SEALED BEAM FIXTURES

AREA REPRESENTATIVES:
SAN FRANCISCO—1123 Harrison St. DENVER—2134 Curtis St.
LOS ANGELES—412 Seaton St. SEATTLE—4130 First Avenue South

Killark

ELECTRIC MANUFACTURING COMPANY

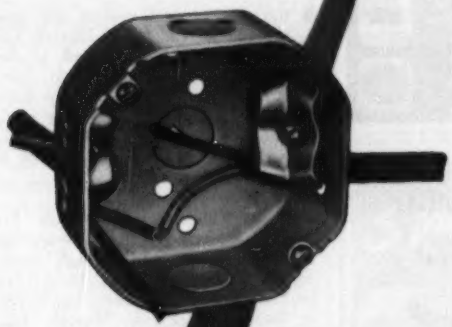
Vandeventer and Easton Aves. St. Louis 13, Mo.

Two NEW Steel City Clamps

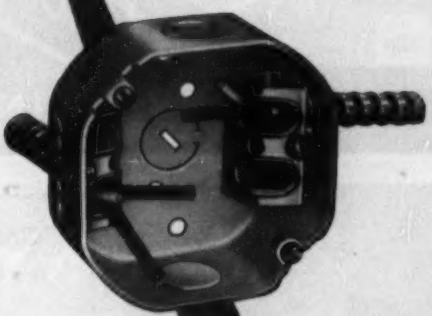
DESIGNED to do better jobs and save installation time

THE "N" CLAMP
For Non-Metallic Sheathed Cable
14-2, 14-3, 12-2, 12-3

THE "A" CLAMP
For Armored Cable
14-2, 14-3, 12-2, 12-3



Whether b… r side entry, this smoo… unded clamp can be d… d upon to hold the cabl… with no possibility o… e to insulation.



Openings are … to prevent damage to in… . Side or bottom entry ca… ade *without backing out* … nd positive, non-slip gr… sured.

Screws in both "N" and "A" clamps are staked to prevent vibrating out of the box in transit.

These clamps will be furnished in the Steel City line of 4" Octagon Clamp Boxes and will be catalogued as follows:

	54151-N	54151-A	
	54151-NS	54151-AS	
"N" for Clamp	54151-NSB	54151-ASB	"A" for Clamp
"S" for Stud	54151-NB	54151-AB	"S" for Stud
"B" for Bar	54151-NE	54151-AE	"B" for Bar
"E" for Ears	54151-NSE	54151-ASE	"E" for Ears

Samples of these clamps can be had upon request

Steel City Leads in *Meeting Your Needs*

STEEL CITY ELECTRIC CO.

OUTLET BOXES AND COVERS SWITCH AND FLOOR BOXES
JUNCTION BOXES, CONDUIT FITTINGS AND ELECTRICAL SPECIALTIES

PITTSBURGH 12, PA.

Ever-Ready
PIN TYPE
Sockets offer the most convenient and economical means of obtaining outdoor or indoor temorary lighting, since the tedious stripping, soldering and taping operations are eliminated.
In street decoration, construction lighting, carnivals, roadside stands, etc., their ease of installation and convenient flexibility is unsurpassed.
Insist on UNION'S PIN TYPE SOCKETS—the FIRST and the BEST.
No. 43308 & 43318 Standard
No. 44408 Intermediate
No. 11108 Candelabra
Sockets
UNION INSULATING CO.
PARKERSBURG WEST VIRGINIA

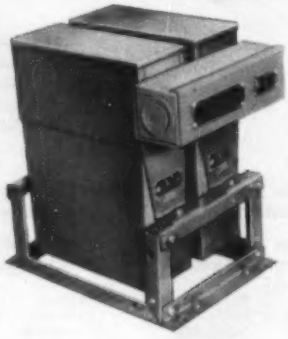
E-M Service Masts are the perfect support for service wires on ranch type houses and low commercial structures that do not provide sufficient ground clearance to comply with National Electrical Code requirements (2322 a. & b. 1947).

E-M Service Masts are neat rugged units that require no guy wires. They look good, are hot galvanized to last a lifetime. Developed in cooperation with utility engineers and electrical contractors.

WRITE FOR BULLETIN 31

Electrical Manufacturing Co.
Pole Line Hardware
153 Angell St., BATTLE CREEK, MICH.

Cornell-Dubilier Capacitors



FOR THE IMPROVEMENT OF POWER FACTOR IN INDUSTRIAL PLANTS
INDOOR OUTDOOR
SEE CATALOG 146 PF

GEO. E. HONN CO.
420 MARKET ST., SAN FRANCISCO 11, CAL.
PHONE SU. 1-7252

● EARL MENDENHALL, president of Sterling Electric Motors Inc., Los Angeles, has announced the appointment of ALAN J. BRONOLD as sales manager for the company. Bronold will take over the duties of ALLEN ADAMS, who for a number of years has headed up Sterling's international and domestic sales organization, and due to illness is retiring from active sales management, but will continue as an officer and secretary-treasurer of the company. Bronold was formerly associated with Westinghouse as assistant general manager in charge of national sales for the Sturtevant Division.

● ANTICIPATING that the needs of national defense will require large amounts of steel entitled to priority in production, Columbia Steel Co. has leased from the government the steelmaking facilities of the wartime steel foundry at Pittsburg, Calif., having a capacity of about 60,000 tons of ingots yearly. It is estimated that more than 80 employees will be required for the new operation.

● BELGIAN electric motors are now being sold by California Electric Co. of 3015 Adeline St., Oakland, as distributors for Belgian Electric Sales Corp., Ateliers de Constructions Electriques de Charleroi, according to C. D. Bronson, manager, who expects to visit the factory and tour Europe in August and September.

● R. E. CUNNINGHAM & SON, Los Angeles, manufacturers representatives in southern California for high tension equipment, instruments, insulators, switches and transformers, has moved to Room 701, Pacific Mutual Bldg., 523 W. 6th St., Los Angeles 14.

● S. R. ROSS, INC., Salt Lake City, has been named Intermountain distributor for the Capehart line of television, radio and phonograph combinations. The firm will handle distribution in Utah, Idaho, Wyoming, Oregon and Nevada.

● FANNIN'S GAS & EQUIPMENT CO. has become distributor of Thor appliances for the state of Arizona, John E. Gunderson, Thor Western area manager, has announced. The new distributor has offices and sales rooms in Phoenix.

● ROWLES SALES CO., San Antonio, Tex., is the new distributor for DuMont television receivers in San Antonio.

● BAILEY METER CO., manufacturer of industrial instruments and controls, has assigned C. R. Owen, engineer, to the Denver branch office.

● As Part Of a national program in company-stockholder relations, General Electric Co. held two open house meetings recently in Oakland and Ontario, Calif. The Ontario meeting, held on a Saturday at a local school, drew 653 stockholders. Following a talk by Ray W. Turnbull, Western commercial vice-president, and lunch in the school cafeteria, the group was taken on an inspection of the company's electric iron factory. In Oakland, 403 attended the meeting, held at the municipal auditorium. George G. Montgomery, a member of the board of directors, was the speaker and the tour was to the company's transformer factory. At both meetings exhibits of G-E products were displayed and *By Their Works*, a color film about the company, was shown.

● The Sturtevant Division of Westinghouse announces the realignment of its sales organization on the Pacific Coast and the formation of two new departments, one to concentrate on sales of air conditioning products, and the other, air handling equipment. Newly appointed Pacific Coast air conditioning sales manager is Frank W. Jordan, and new district air handling sales manager is Ralph W. Sigmund. Both men will headquarter at 410 Bush St., San Francisco. The realignment will enable the division to provide more specialized service for customers in both the air conditioning and air handling fields.

● Lear Inc. announces the appointment of C. E. Willis as assistant sales manager of its electromechanical division. He will direct the company's West Coast sales and field engineering activities, with headquarters at the firm's Los Angeles plant.

● General Controls, Glendale, Calif., has announced the appointment of two members to its staff of sales engineers. William C. Stringfellow has been assigned to the Dallas branch office and R. Roedder to Los Angeles.

● Jack Beard Jr., Phelps Dodge Copper Products Corp., has been transferred from the Seattle office to the Portland office, where he will cover the Oregon territory.

Write for Free 1950 Catalog

Weatherproof
ONLY UNION
offers a complete
WEATHERPROOF SOCKET LINE
For — Heavy Duty - - - - #63310 Canvas
Service - - - - - - #60666
" - - - - - - #43310 Extratuf
General Purpose - #43310 Bakelite
Rubber - - - - - - #43329
When in need of a sturdy dependable Weatherproof Socket come to PIGTAIL SOCKET HEADQUARTERS — UICo.
No. 63310 CANVAS
No. 60666
No. 43310 EXTRATUF
No. 43329 RUBBER
Sockets
UNION INSULATING CO.
PARKERSBURG WEST VIRGINIA

SWITCH to the BEST!
with TORKMASTER
UTILITY TIME SWITCH
When selecting automatic time switches for indoor and outdoor uses remember the advantages of dependable TORK CLOCKS. Ideal for — Signs and Window Lights — Pumping — Defrosting — Oil Burners — Pre-heating — Lead or Wax — Hen House lights. Write today for complete details.
No. 948A $10.00 List
30 AMP • SINGLE POLE TELECHRON MOTORED
America's Biggest Time Switch Value
TORK CLOCK
TORK CLOCK CO., INC.

smart accent for modern living
For the finest in contemporary lighting see Prescolite's new Swiv-O-Lite line. Decorative distinction and rigid construction—in a wide range of functional designs for commercial, portable and pin-up installation. Available in six decorators finishes — coral, green, gray, satin chrome, brass and bronze.
PRESCOLITE'S new
accent lighting
SWIVOLITE
to complement the popular Prescolite recessed fixture line. Write today for complete catalog and price information.
* individually packed — one fixture to a carton
1600 Bancroft Way, Berkeley, Calif.
Prescolite
SWIVOLITE is a product of Prestotool Company
your best source for commercial, portable and pin-up modern lighting fixtures

● DANNY R. MARSHALL and DARRELL R. PERON, formerly with Sues, Young & Brown, Los Angeles, have formed a new distributing firm to be known as Marshall and Peron Co., 1813 S. Figueroa St., Los Angeles. They have acquired distribution for Conrac Inc., manufacturers of custom-built TV sets.

● GRANT C. EHRLICH, president of Resin Industries, a Santa Barbara company making plastic insulated wire and cable, announces the appointment of ROBERT J. GRASLEY as head of the technical staff. Grasley has had extensive experience in the wire and cable industry with such companies as Northern Electrical Co. Ltd. of Montreal, Plastic Wire & Cable Corp., Electrical Insulation Corp., Welding Engineers Inc. Resin Industries last year moved to larger quarters in Santa Barbara.

● GEORGE BAACK, now sole owner of the Record Merchandising Co., will move to much larger quarters one and a half blocks from the present location to the 600 block on Columbus at Filbert St., San Francisco, where new kitchens and builders supply sections will be added to the appliance, radio and television departments. Baack is presently chairman of the San Francisco Unit of Northern California Electrical Bureau.

● H. G. RANDOLPH has been appointed a district manager in General Electric's receiver division, with headquarters at Los Angeles. The appointment is a part of G-E's expanding commercial operations in the radio and television receiver fields. At the same time BYRON S. WELLS has become a district manager in G-E's receiver division, with headquarters at Seattle. He will be responsible for sales of G-E home receivers in Washington, Oregon, Montana, Idaho, Utah, northern Wyoming, eastern Nevada and Alaska.

● HERSCHEL FLETCHER, downtown sales representative for Westinghouse Electric Supply Co., Los Angeles, has been appointed sales manager for Hawaiian Electric Co., Honolulu, independent Westinghouse appliance distributor. ROBERT STONE, a district sales representative, will succeed Fletcher in the downtown Los Angeles area. In another personnel change, BERT OLSON, formerly sales promotion manager of Westinghouse Electric Supply Co., has left the firm to open a store under the name of Olson's Appliances, Glendale. BERT KRAMER, sales promotion manager, will absorb Olson's duties with the help of HARRY ANDREWS, recently appointed to the new position of assistant sales promotion manager.

● CANNON ELECTRIC DEVELOPMENT Co. has appointed two new plant executives, a comptroller and a production manager, at its Los Angeles factory. RAY O. HILL is the new comptroller, replacing ANTHONY SLANGA, resigned. JOHN K. TROTTER assumes the position of production manager, formerly held by RICHARD L. ROWEN, recently elected vice-president of Cannon Electric.

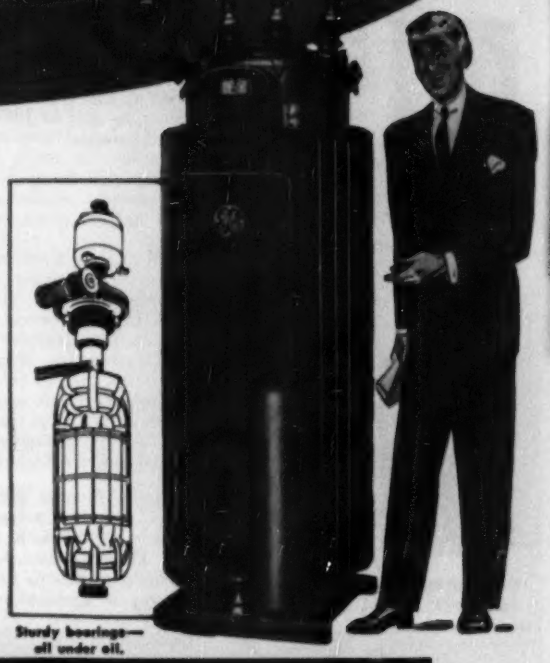
● NEWLY named sales representatives to Allis-Chalmers West Coast offices are EDWARD E. WILSON and RONALD D. BROWN to the company's Portland district office; DAVID H. HOLMES to the Seattle district office, and JAMES V. MILLER to the Spokane district office.

● HARRY E. AUSTIN, San Francisco district manager, has been elected a vice-president in charge of the Pacific Coast district for RCA Communications Inc.

Requires Less Maintenance

than any other regulator you can buy...

GENERAL ELECTRIC IRS INDUCTION VOLTAGE REGULATOR



Sturdy bearings—all under oil.

★ No contacts in the main circuit.

★ No cams or springs or elaborate gear trains.

★ No mechanical brake to adjust, no separate braking circuit.

★ Even the oil lasts longer—because the tank is sealed to stop all breathing.

General Electric IRS induction voltage regulators give accurate, stepless regulation—with no time-delay. They respond immediately and will correct the voltage at an average rate of 1 per cent in 1½ seconds throughout the entire range of ±10% regulation.

And—no other regulator can match them in low maintenance costs. Ask for Bulletin GEA-2985.

Apparatus Dept., General Electric Company, Schenectady 5, New York.

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

FEATURES YOU'LL LIKE

IN THE NEW SERIES TS50
INTER-MATIC
TIME SWITCH

Easy
TO REMOVE MECHANISM — just press spring.

Easy
TO SET TIME— just pull dial forward — turn in either direction.

Easy
TO ADD EXTRA TRIPPERS without removing the dial.

Easy
TO CHECK operation of the motor thru window in cover.

WRITE TODAY for complete information on the Revolutionary New Series TS50 Time Switches.

only $10.95 and up LIST f.o.b. factory Chicago

INTERNATIONAL REGISTER CO.
3634 W. Washington Bl.
Chicago, Ill. Dept. 910-F

INTER-MATIC
TIME SWITCH

NEWS ABOUT PEOPLE

● NEW titles more definitive of their functions in the operations department of Pacific Gas and Electric Co. were announced as effective Aug. 1. There is no change in responsibilities and only minor adjustments have been made in functions performed. GEORGE H. HAGER is manager of electric operation. CHARLES Z. YOST is general superintendent of transmission and distribution, a recent promotion. H. T. SUTCLIFFE is general superintendent of substations; E. A. CRELLIN, of hydro generation; I. W. COLLINS, of power control; R. H. MILLER, of communications; V. F. ESTCOURT, of steam generation; J. N. SPAULDING, of water systems, and ARTHUR SCOTT is protection engineer. In the general construction department O. W. PETERSON is manager of the department and A. J. SWANK, assistant manager. Similar changes of title were made in the gas operations departments.

● A. F. SHEEAN has become Tacoma branch manager for Westinghouse Electric Supply Co., succeeding E. W. MCBRATNEY, who resigned to establish his own business. He joined WESCO in 1928 at Seattle, later became an apparatus and supply salesman for the company, and in 1947 became North Pacific district lamp manager. A year later he was made sales promotion manager for the apparatus and supply department, remaining in that position until his recent appointment.

● MARGARET ROSS HYLAND has become home laundry equipment field representative for General Electric, with headquarters in San. Francisco. Her territory includes the nine Western States. Mrs. Hyland joined G-E two years ago as field representative for the Northwest and Salt Lake districts. Prior to that time she was home service representative with Puget Sound Power & Light Co. in Seattle.

● SCOTT BEAMER will begin teaching a new course, "Electrical Construction Practices," 885 A, B, in Oakland and San Francisco branches of the University of California Extension Service. Beamer is a consulting electrical engineer associated with Harrington in Oakland.

● KEN ANDERSON has been added to the sales staff of Thomson-Diggs Co., appliance division, San Francisco. He will cover part of the San Francisco area.

STEEL STRAND
Crapo

ALL the strength and durability inherent in steel are combined—with definite economies—in Crapo Galvanized Steel Strand. Heavy, ductile, tightly-bonded zinc coatings, applied by the famous Crapo Galvanizing Process, provide lasting protection against corrosion.

Ask the distributor of Crapo Galvanized Products near you or write direct for further information!

INDIANA STEEL & WIRE CO.

TRANSERT
Brushes give
LONGER LIFE
EVEN AT LOW HUMIDITY

HELWIG SPEER

U. S. Pat. 2,105,634

The transverse graphite insert—exclusive with Helwig-Speer Transert Brushes — provides even current distribution, better ring lubrication. That means reduced ring wear, more uniform frictional characteristics for your rotating machines. Wedge- and force-fitted, the inserts cannot fall out. Catalog 93 contains complete information on ordering brushes. Write for your copy today.

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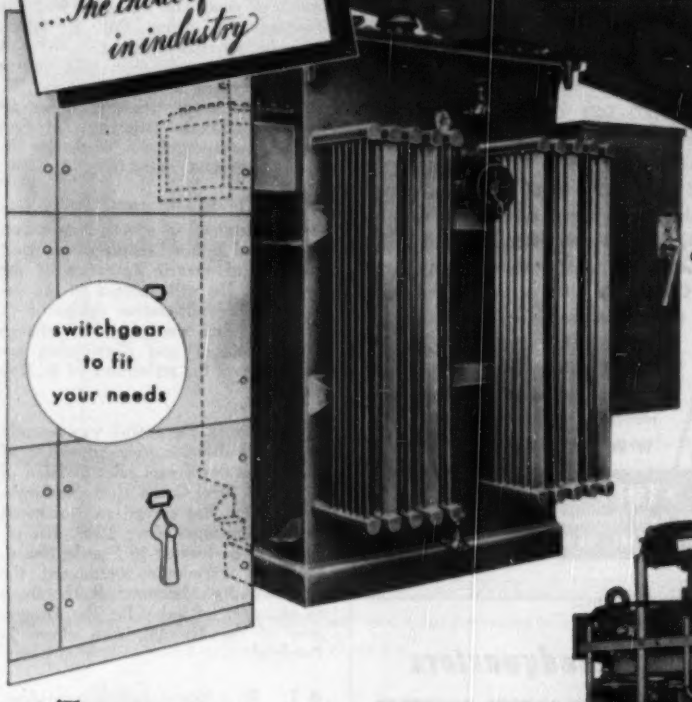
HELWIG CO., Carbon Products
Makers of Multiflex and Transert Brushes

WAGNER TRANSFORMERS
...The choice of leaders in industry

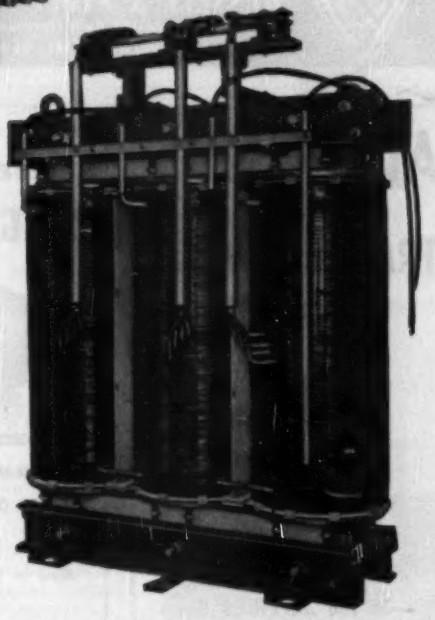
Wagner Unit Substation Transformers

...designed to meet your ... distribution requirements

switchgear to fit your needs



Core and coil assemblies of Wagner unit substation transformers are designed by experienced engineers, and built and tested by skilled workers. Highest quality materials are used throughout, and meticulous attention to detail marks each step in their construction.



The transformer is the vital part of a load center distribution system. If the transformer fails, the entire system is dead whereas only part of the distribution system is affected by the failure of a switch or circuit breaker.

You can be sure of a dependable continuous flow of power from a Wagner transformer and you can be sure that it has been carefully designed to meet your distribution requirements.

Wagner unit substation transformers with incoming high voltage switch sections to meet your requirements, and with proper throats on the secondary side to connect to any make of switchgear, are available in the usual range of ratings up to 2000 kva. Our factory-trained sales engineers are well qualified to recommend the various combinations necessary to handle your unit substation requirements and they will be glad to give you immediate service.

Wagner unit substation transformers have been installed in all kinds of industrial plants including synthetic rubber, petroleum, steel, chemical, aircraft, automotive, paper, and many others. The importance of the transformer in a unit substation justifies calling in the Wagner sales engineer to help solve your load center problems.

Bulletins TU-13 and TU-56 describe the design and construction features that make Wagner liquid-filled and dry-type unit substation transformers outstanding.

Wagner Electric Corporation
EST. 1891

ELECTRIC MOTORS · TRANSFORMERS · INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS · AIR AND HYDRAULIC

WAGNER ELECTRIC CORPORATION
6381 Plymouth Ave., St. Louis 14, Mo., U.S.A.

BRANCHES IN 29 PRINCIPAL CITIES

R&S LIGHTING FIXTURES

Complete Line
EXPLOSION-PROOF
Class 1, Groups C & D

Meet ALL Standards PLUS

SCIENTIFICALLY DESIGNED REFLECTORS with highest reflection factors.

STANDARD SIZE CONDUIT BASE common to all fixture sizes permitting a variety of outlets.

EASY FIELD CHANGES with interchangeable reflector globe assemblies—no wiring changes necessary.

SIZES 100 to 500 Watts.

COMPLETE LINE of waterproof type for outdoor and moist locations.

HIGHEST EFFICIENCY — LOWEST MAINTENANCE insured by 48 years of design and manufacturing experience.

Write for catalog H47-10

A9

RUSSELL & STOLL COMPANY, INC.
Precision-Built Electrical Equipment
125 BARCLAY STREET, NEW YORK 7, N. Y.

ALL KINDS
of SMALL
TRANSFORMERS

—in the JEFFRIES line

Practically all your small transformer needs are supplied by the Complete Jeffries line. We have specialized for years in providing transformer to exactly match your requirements. If not in our regular line, we build to meet your specifications in a hurry!

Minimize your voltage losses. Specify scattered transformers to eliminate duplicate conduit runs, and save on power costs.

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1710 E. 57th St. Los Angeles 11, Calif.

Headquarters
MAGNET WIRE

Complete Stock for Immediate Shipment from all 4 warehouses

•

Send for free catalogs & literature

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Four convenient warehouses
Serving 11 Western States

ELECTRICAL SPECIALTY CO.

SAN FRANCISCO 316 Eleventh St.
LOS ANGELES 418 E. Third St.
SEATTLE 3406 First Ave. So.
DENVER 1015 Twenty-first St.

● R. Roy Cowles, assistant engineer of electric operations for Pacific Gas and Electric Co., retired recently after 40 years of service. Among others retiring are Charles E. Schnell of Fresno, superintendent of substations, hydro and steam in PG and E's southern area, who has been with the company 30 years; Roy E. Swan, assistant purchasing agent in the San Francisco general office, who retires after 45 years of service; Emil W. Biller, assistant treasurer, after 29 years; Clifford Bartlett of San Rafael, manager of the North Bay division, after 44 years.

● Carl L. Yager, office assistant in the department of electric operation of PG and E, has become an assistant engineer of electric operation of the company. He will succeed to the department administrative duties of C. Z. Yost, who was placed in charge of transmission and distribution operation upon the retirement of R. Roy Cowles.

● Marion H. Freedman was recently appointed division vice-president of the Pacific Northwest sales division of Columbia Steel Co., a U. S. Steel subsidiary. He has served as Northwest division manager since 1949. His offices will be located in Seattle. Simultaneously Freedman announced the designation of Marshall B. Harrison as manager of sales for the Oregon area of the division, with offices in Portland.

● I. W. Borda, vice-president, Okonite Co., has just appointed C. D. Ham as the Portland district manager for the Okonite Co., with offices in the Pittock block, Portland. Ham is a graduate of the University of Nevada, served in U. S. Naval Aviation during the war and recently was with Westinghouse Electric Corp. in lighting sales engineering.

● D. J. Wolters recently resigned as chief electrical inspector of Salt Lake City. His department was under criticism for the handling of permits.

● Stephen I. Balogh, 76, who practiced as a consulting engineer both in this country and in Europe, died recently at Seattle. He came to this country from Hungary 25 years ago and had lived in Seattle for three years.

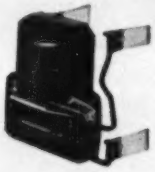
● Ralph Burdick, 49, district engineer at Bend for Pacific Power & Light Co., died recently of a heart condition. He started with the company in 1928 as a storekeeper, and ten years later was made an engineer.

Be thrifty - use the I-50

THERE'S LESS TO MAINTAIN!

With the I-50 watthour meter, all need for periodic replacement of bearings has been eliminated. Magnetic suspension of the rotating element eliminates all vertical pressure. Contrast this with a conventional meter, where pressure of the disk on the lower bearing is measured in tons per square inch.

Corrosion is eliminated by a combination of unit-molded base and stainless-steel cover- and socket-sealing rings. Accurately controlled relief gaps permit the I-50 to withstand voltage surges that would put an ordinary meter out of service.



Each complete electromagnet is a unit assembly, not subject to misalignment. This unit construction makes possible an economical service plan. A complete frame and electromagnet assembly can be exchanged for a rebuilt one—as a unit. Cost of the assembly is no more than the cost of just a single current coil for an older meter.

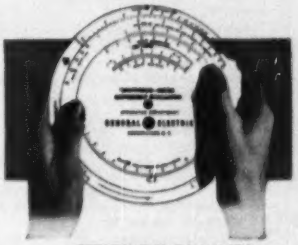
time to retire ... old watthour meters?

Meters of pre-1914 design should be retired promptly.

Meters of 1914-1925 design lose revenue at high loads, justify few or no repairs.

Meters of 1926-1936 design also require appraisal.

Now—with the aid of the retirement evaluator*—you can determine which groups of your meters are losing money and should be retired promptly. The evaluator is based on an economic formula for meter retirement developed by General Electric engineers. Ask your G-E representative for complete information. Apparatus Department, General Electric Company, Schenectady 5, N. Y.



*RETIREMENT EVALUATOR

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

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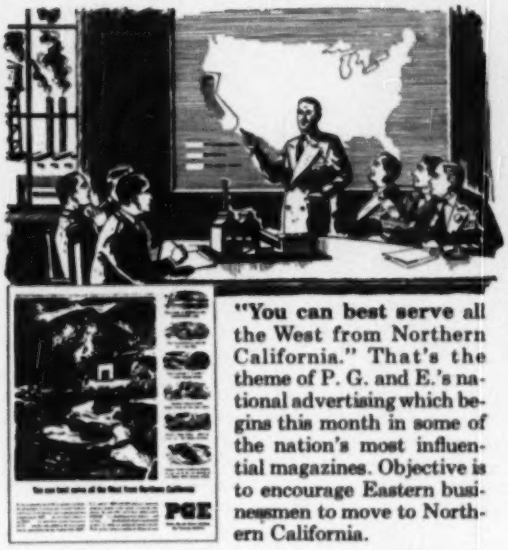
PROFILES

LINE CONSTRUCTORS chapter of NECA for California and Nevada has these officers—Gerald Peterson, Peterson Engineering Co., San Francisco, president; Al Eddy, Ets-Hokin & Galvan, San Diego, vice-president; Charles Wible, A. S. Schulman Electric Co., L.A., governor

R. G. HOLABIRD (right) was appointed regional manager of National Electric Products Corp. Grouped into the newly set up region are the Northwest, Southwest and San Francisco districts. For seven years Holabird had been district manager at San Francisco (where he is succeeded by W. D. Ross), and formerly was at Los Angeles

BELOW—Studying plans for Pacific Electric Mfg. Corp.'s new manufacturing plant in Santa Clara County are from left: A. A. Browne, vice-president and general manager; Joseph S. Thompson, president; Edward F. Sixtus, vice-president in charge of sales. Story of this expansion is on page 108

New national advertising campaign to help bring more business into your community



"You can best serve all the West from Northern California." That's the theme of P. G. and E.'s national advertising which begins this month in some of the nation's most influential magazines. Objective is to encourage Eastern businessmen to move to Northern California.

Feature of the new campaign is Northern California's dramatic success story. The ads explain why this is the best location for serving the West—skyrocketing population, high per capita income, high farm profits, fine transportation, nearness to raw materials, low-cost power, pleasant California living.

Your community will benefit because every new factory and family contributes to the prosperity of the entire area, expands the market for your products and services . . . and provides an even better and more solid economic foundation for Northern California's growth in the years ahead.

Watch for the ads as they appear in these key publications. Combined circulation is 3,375,000 . . . with more than two million copies going to proprietors, directors, managers, officials and professional men—businessmen with the authority to decide on new developments in your community.

Your gas and electric rates are among the lowest in the nation

P·G·and E·

Adequate Wiring Can Be Sold

IF WE JUST KEEP CHOPPIN'

There is no *easy* way to sell Certified Adequate Wiring. It takes persuasion, perseverance and perspiration. All of us in the electrical industry . . . manufacturer, dealer, contractor and utility . . . must grab a sharp axe and chop—chop—chop.

But the job of clearing the forest of obsolete, bottleneck wiring pays off in the form of a smooth highway to greater and more profitable appliance sales and increased power load.

Your customers and clients benefit, too, in the added convenience, comfort, safety and economy that result when Certified Adequate Wiring is installed.

So let's keep choppin' until that happy day when we can holler "TIM-*BER-R-R-R!*"

PACIFIC COAST ELECTRICAL ASSOCIATION

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601 West Fifth Street, Los Angeles 13, California